

**IEEE P802.11  
Wireless LANs**

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

Date: 2006-07-17

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**Abstract**

Minutes of the 802.11 full working group.

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## Opening Plenary: Monday, July 17, 2006

### 1.1. Introduction

- 1.1.1. Meeting called to order by Stuart J. Kerry at 13:40.
- 1.1.2. The agenda of the 98th session of 802.11 is in doc: IEEE 11-06-754r3.
- 1.1.3. Secretary – Tim Godfrey
- 1.1.4. Officers and Chairs of 802.11:

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**1.2. Approval of the Agenda**

- 1.2.1. Stuart J. Kerry reviews the agenda in 06/754r3 for the group
- 1.2.2. Stuart asks for any modifications to the agenda
  - 1.2.2.1. Denis K notes that there is a need for n.1415 Ofcom recommendations in 5.1.6
- 1.2.3. The agenda is approved with unanimous consent.

**1.3. Approval of Minutes of May 2006, Jacksonville**

- 1.3.1. Stuart asks if there are any issues arising from these minute? There are none.
- 1.3.2. The minutes from May 2006 are approved with unanimous consent.

**1.4. Announcements**

- 1.4.1. Stuart reviews the courtesy notices.
- 1.4.2. There are 320 people in the room
- 1.4.3. Straw poll of new attendees here for the first time: 36

**1.5. Treasury report**

- 1.5.1. Al Petrick presents document 06/1010r0.
- 1.5.2. Treasury contained \$178K in May. We have a reserve for Melbourne meeting of \$50K. There was a \$55K surplus from Jacksonville.
  - 1.5.2.1. September meeting early registration until Aug 1.
  - 1.5.2.2. Suspension of 802.20 will reduce attendance to 300, causing a loss of \$80K USD for the meeting.
  - 1.5.2.3. The wireless groups have lodged a complaint against IEEE SA regarding the unilateral cancellation of 802.20 without informing the Wireless groups.
- 1.5.3. Stuart notes that 2008 May/Sept meetings will be in the USA.

**1.6. Review of Policies and Procedures**

- 1.6.1. Al Petrick presents document 11-06-0430r4 to the body.
- 1.6.2. Review of working group officers and duties for all wireless working groups. Members are encouraged to wear their voting tokens. Voting rights are also indicated by a printed indication on the badge corner.
- 1.6.3. 802 LMSC P&P is Nov\_2005\_r051204.doc approved and revised in January 2006
- 1.6.4. Review of 802.11 operating policies and procedures, registration, payment of fees. 802.11 P&P are in 11-05-456r0, which is posted on the web site. A revision will be up for vote this week. Roberts Rules are revision 10 (Gold Book).
- 1.6.5. Review of registration requirements
- 1.6.6. Review of rules against photographs, tape recording, and media briefings.
- 1.6.7. Review of procedures for server access and reflector subscriptions. Members must participate in 75% of meetings before being added to reflector.
- 1.6.8. Review of voting rights and process for obtaining voting rights, and signing up for email and reflectors. The email confidentiality disclaimer was presented.

- 1.6.8.1. Members are reminded that confidentiality notices on emails posted to the reflector are not allowed.
- 1.6.8.2. Any material with confidentiality or copyright disclaimers attached will not be accepted for IEEE 802.
- 1.6.9. Review of the process and requirements for gaining and keeping voting rights.
- 1.6.10. Attendance recording procedures are reviewed
  - 1.6.10.1. Signing in for 802.11 attendance is required for gaining and maintaining voting rights. There is no opportunity to sign in late if you forget.
  - 1.6.10.2. There is a sign in sheet that must be signed once per day, from 7:30 to 17:30 each day at the IEEE registration desk.
  - 1.6.10.3. Attendance credit pool is based on all daytime sessions, and evening sessions and tutorial are optional and are extra credit if attended.
  - 1.6.10.4. Al Petrick reads the following statements to the body:

July 2006

doc.: IEEE 802.11-06/0430r3

### IEEE-SA Standards Board Bylaws on Patents in Standards

#### **6. Patents**

IEEE standards may include the known use of essential patents and patent applications provided the IEEE receives assurance from the patent holder or applicant with respect to patents whose infringement is, or in the case of patent applications, potential future infringement the applicant asserts will be, unavoidable in a compliant implementation of either mandatory or optional portions of the standard [essential patents]. This assurance shall be provided without coercion. The patent holder or applicant should provide this assurance as soon as reasonably feasible in the standards development process. This assurance shall be provided no later than the approval of the standard (or reaffirmation when a patent or patent application becomes known after initial approval of the standard). This assurance shall be either:

a) A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement either mandatory or optional portions of the proposed IEEE standard against any person or entity complying with the standard; or

b) A statement that a license for such implementation will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination.

This assurance is irrevocable once submitted and accepted and shall apply, at a minimum, from the date of the standard's approval to the date of the standard's withdrawal.



**Slide #1** Approved by IEEE-SA Standards Board – March 2003 (Revised February 2006)

Submission

Slide 14

Stuart J. Kerry, Philips Semiconductors

## Membership & Anti-Trust

- **Individual membership**
  - In all IEEE standards meetings, membership is by individual, hence you do **not** represent a **company or organization**.
  
- **Anti-Trust laws**
  - The Anti-Trust laws forbid the discussion of prices within our meetings.

## Inappropriate Topics for IEEE WG Meetings

- Don't discuss the validity/essentiality of patents/patent claims
- Don't discuss the cost of specific patent use
- Don't discuss licensing terms or conditions
- Don't discuss product pricing, territorial restrictions, or market share
- Don't discuss ongoing litigation or threatened litigation
- Don't be silent if inappropriate topics are discussed... do formally object.

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Administrator at [patcom@ieee.org](mailto:patcom@ieee.org) or visit  
<http://standards.ieee.org/board/pat/index.html>

This slide set is available at  
<http://standards.ieee.org/board/pat/pat-slideset.ppt>



**Slide #2** Approved by IEEE-SA Standards Board – March 2003 (Revised February 2006)

Submission

Slide 16

Stuart J. Kerry, Philips Semiconductors

- 1.6.10.5. Al Petrick asks if there are any questions on this policy. There are none.
- 1.6.11. Review of copyright status of submissions
- 1.6.12. Review of standards compliance disclaimers
- 1.6.12.1. IEEE 802 “Unapproved Drafts” are to be used for the purposes of IEEE Standardization activities
- 1.6.12.2. IEEE 802 “Unapproved Drafts” must NOT be used to claim conformance/compliance, as Drafts are subject to change
- 1.6.12.3. You are at RISK if IEEE 802 “Unapproved Drafts” are USED for anything other than IEEE Standardization activities
- 1.6.13. Review of meeting etiquette.
- 1.6.14. Al Petrick asks for any questions.
- 1.6.14.1. Adrian Stephens asks for clarification on statements regarding unapproved drafts. There have been questions about drafts that have been modified but not approved by a task group.
- 1.6.14.2. Al notes that this presentation is specific to drafts that have not been approved by the IEEE standards board. Adrian requests that the wording be clarified for task-group unapproved drafts.
- 1.6.14.3. Al takes an action item to work on that.

### 1.7. IEEE SA Letters of Assurance

- 1.7.1. Stuart J. Kerry asks if everyone is aware of the IEEE patent policy. Are there any questions?
- 1.7.1.1. No questions
- 1.7.2. Stuart asserts that this means members will adhere to the policies.

- 1.7.3. Stuart J. Kerry asks if any members have any new LOAs.
  - 1.7.3.1. One document is submitted by Clint Chaplin from Symbol Technologies. Statements are pertaining to 11a, 11b, 11e, 11g, 11i, 11k, 11n, 11r, 11s, 11b.
- 1.7.4. Stuart J. Kerry asks if any members are aware of any patents applicable to the work of 802.11.
  - 1.7.4.1. There are none.

## **1.8. Announcements**

- 1.8.1. Stuart reminds members to watch their computers and possessions during the meetings.
- 1.8.2. Members are requested to always wear their badge.

## **1.9. Interim meetings**

- 1.9.1. September 17<sup>th</sup>, Melbourne Australia
  - 1.9.1.1. There are 3 hotels, Holiday Inn Crowne Plaza (closest).
  - 1.9.1.2. Early Registration 900\$AU, 1100 late, 1300 on site.
- 1.9.2. November 12-17, Hyatt Dallas Downtown
- 1.9.3. January 14-19 2007, Hilton London Metropole
  - 1.9.3.1. An 802 sponsored interim in one location.
- 1.9.4. March 11-16, 2007, Orlando
- 1.9.5. May 2007.Montreal.
  - 1.9.5.1. Queen Elizabeth Fairmont.
- 1.9.6. July 2007 – San Francisco
- 1.9.7. Sept 11-16 2007, Hilton Waikoloa
- 1.9.8. November 2007 - Atlanta
- 1.9.9. Discussion
  - 1.9.9.1. Jon Rosdahl requests that the May 08 meeting be moved to a week earlier. Al Petrick takes the action item.
  - 1.9.9.2. Jon has put comments on the reflector to represent members' opinions.
  - 1.9.9.3. Jon asks that due consideration of travel cost be given to meeting locations.
  - 1.9.9.4. Jim Petranovich – requests poll for May meeting preference.
  - 1.9.9.5. Straw poll: Preference for week of May:
    - 1.9.9.5.1. Starting May 4<sup>th</sup>: 64
    - 1.9.9.5.2. Starting May 11<sup>th</sup> 50
    - 1.9.9.5.3. Starting May 18<sup>th</sup>. 14

## **1.10. ExCom Meeting Report**

- 1.10.1. Stuart reports from the 802 ExCom.
- 1.10.2. Denver had 1372 attendees, 131K expense surplus 93K.
- 1.10.3. San Diego 521K expense, surplus 176K.
- 1.10.4. Standards board actions – 802.20 suspension.
- 1.10.5. [802\\_comments@ieee.org](mailto:802_comments@ieee.org) for comments on 802.20 issues.
- 1.10.6. PARs to Nescom will be detailed later
- 1.10.7. Get802 program in 2007 is short by \$200K. Looking for options to increase revenue – may prevent printing or downloading of standards unless paid.

- 1.10.8. Karen Kinney is appointed 802 ombudsman.  
[802ombudsman@ieee.org](mailto:802ombudsman@ieee.org)
- 1.10.9. Attendance software ad-hoc meeting will be Wednesday 4-5pm.
- 1.10.10. 802 designators – IEEE wants to change designations for standards. Example 802.11.2 instead of 802.11T. These are not finalized yet.
- 1.10.11. Tutorial review. Congestion control. CFI 802.3 for SG on higher speed Ethernet. 802.21 overview w/ Steve McCann. Body Area Networks.
- 1.10.12. ISO/IEC/JTC1 update
- 1.10.13. Architecture group – there a possible 802.11 SG on audio visual. 802.1 wants this to be their group.
- 1.10.14. 802 is now ITU-R and ITU-T sector member
- 1.10.15. 802.20 requested an appeal hearing. The request was denied, but there will be a limited appeal.
- 1.10.16.

### **1.11. 802 PAR updates**

- 1.11.1. PAR extension for 11k
- 1.11.2. 802.1at
- 1.11.3. 802.1au
- 1.11.4. 802.1ah
- 1.11.5. 802.3av – 10g PON
- 1.11.6. 802.3ar – rate mgmt
- 1.11.7. 802.22.2 – recommended practice for installation and deploy
- 1.11.8. These are all posted on the reflector.
- 1.11.9. Stuart asks if there are any concerns or opinions on these PARs?  
None are stated. If any come up, they are due by 5pm Tuesday

### **1.12. Attendance Update**

- 1.12.1. Harry Worstell presents the current voter status in document 06/994r1
  - 1.12.1.1. 429 voters
  - 1.12.1.2. 47 potential voters
  - 1.12.1.3. 54 nearly voters
  - 1.12.1.4. 266 aspirant voters
- 1.12.2. There is one slot extra credit given for Monday and Tuesday evening tutorials. Use WG for the classification.
- 1.12.3. Attendance server is at <http://newton/11/attendance>. Members have to fill out their contact information on this site before claiming attendance. Use proper name capitalization – lower case will collate to the end of the list.
- 1.12.4. Documents are at [802server.events.ieee.org](http://802server.events.ieee.org)
- 1.12.5. Members are advised to not try to use wirelessworld for contact info. Simply click “cancel” if prompted for contact info update.

- 1.12.6. Discussion of the 1200 series of document numbers that are already used. Harry will work on a solution.
- 1.12.7. Questions and Discussion
  - 1.12.7.1. Stuart notes that 802.11 is the only one using the system.
  - 1.12.7.2. Is there any tally showing your current attendance for the week? Harry – no we have not done that yet. It has to be post-processed.
  - 1.12.7.3. Harry states that this system will evolve to enable web-based letter ballots.
  - 1.12.7.4. Does the local document server have FTP access? Yes – Harry will update the slides.
  - 1.12.7.5. A member indicates that it will not accept entries without state – There are no states outside the USA.

### **1.13. 802.11k PAR extension**

- 1.13.1. Stuart states that we will re-affirm the decision of the interim in this meeting (which was approved 57 : 0 : 6 in May 2006)
- 1.13.2. The motion is to reaffirm the motion to approve the 802.11k PAR.
- 1.13.3. Move to reaffirm the decision: TGk requests the 802.11 WG to forward the proposed 11k PAR extension to 2011 (as found in document 06/806r0) to NESCOM for consideration of the extension of the PAR.
  - 1.13.3.1. Moved Al Petrick
  - 1.13.3.2. Second Richard Paine
  - 1.13.3.3. Vote: motion passes 142 : 3 : 7

### **1.14. Policies and Procedures**

- 1.14.1. Al Petrick presents document 06/1010r0
- 1.14.2. Current P&P is 05/456r0
- 1.14.3. The group was notified in May that the P&P update was posted and will be voted on
- 1.14.4. Update in 06/0812r2 will be voted upon this week.
- 1.14.5. The vote will be Friday at the closing plenary.
- 1.14.6. Al reviews the changes in the current version
  - 1.14.6.1. Flow in chart 10.1.- removed paragraph references.
  - 1.14.6.2. Clarification to 4 hour rule in 2.6 – motion does not have to be included. New text reads:
    - 1.14.6.2.1. Motions may be made at appropriate times during the meetings (see ref. [rules3]) . However, all technical changes to a draft shall be in a submission that has been accepted by document control according to document formats specified in section 2.5 and has been made available electronically for a period of not less than four active WG session hours.
  - 1.14.6.3. Stuart notes that the CAC approved these changes with a vote of 14 : 0 : 1 for this change and wording.
  - 1.14.6.4. Al reiterates that only the technical changes, not the motion, must be in the submission.
- 1.14.7. Discussion
  - 1.14.7.1. David Hunter asks about working group hours. This WG doesn't stat until Monday afternoon in a Plenary. Thus we can't vote on anything today.
  - 1.14.7.2. Stuart notes that we have discussed this. There will be further amendments to allow documents to be submitted 48 hours before a meeting starts, there will be no restriction.
  - 1.14.7.3. Clint Chaplin notes that the break counts, so we can start voting at 5:30.

## 1.15. Reports

- 1.15.1. Editor – Simon Barber
  - 1.15.1.1. We will update the best practices document. Will update ISO status on Friday. There will be an editors meeting Tuesday at 7:00AM.
- 1.15.2. 802.18 report: Denis Kuahara
  - 1.15.2.1. Report in document 06/1013r0
  - 1.15.2.2. OFcom consultation on radiated power levels in 2.4 and 5GHz bands. Proposing up to 10 watts in 2.4GHz band and 4W in 5GHz band.
  - 1.15.2.3. M.1450 draft will be on .11 WW Monday evening
- 1.15.3. WNG SG – Stephen McCann for TK Tan
  - 1.15.3.1. The agenda is 06/944r1. There are two sessions, one 08:00 Tuesday, and one Wednesday in the mid-week plenary.
  - 1.15.3.2. There are 7 submissions.
  - 1.15.3.3. There will be a presentation Tuesday regarding an AV Study Group.
- 1.15.4. TGk – Richard Paine
  - 1.15.4.1. There were telecoms since last meeting. This meeting will conclude LB83 comments, and will go to sponsor ballot.
  - 1.15.4.2. There will be a vote on 06/925r0 (disassociate imminent) on Wednesday at 09:30
- 1.15.5. TGm – Bob O'Hara
  - 1.15.5.1. The 2<sup>nd</sup> recirculation of 802.11rev-ma had results 99 : 11 : 8. Will conduct comment resolution this week. In Emma A. Will resolve 90 comments, and ask for approval for conditional approval process to go to RevCom.
  - 1.15.5.2. There is one interpretation request to process.
  - 1.15.5.3. There are no updates or requests for ANA numbers.
- 1.15.6. TGn – Bruce Kraemer
  - 1.15.6.1. TGn will conduct comment resolution. Will alternate between all-hands meetings and ad-hoc sessions which run 4 in parallel. Will vote on topics in all-hands sessions. Meeting in this room at 4pm.
  - 1.15.6.2. TGn will discuss interim ad-hoc meetings. In the September session, we will have only one room, which will impact ability to run concurrent meetings.
- 1.15.7. TGp – Harry Worstell for Lee Armstrong
  - 1.15.7.1. TGp failed their first letter ballot. There have been teleconferences to discuss how to move forward. There will be a vote to determine whether the first draft will be a baseline. Then modifications will be accepted by 75% vote
- 1.15.8. TGr – Clint Chaplin
  - 1.15.8.1. There are 1400 comments to be resolved – all but 70 have been resolved. There are 29 pending approval. There are 41 left to do this week, but they are challenging.
  - 1.15.8.2. Doc 537r20 is the current comment spreadsheet.
  - 1.15.8.3. Motions are in 06/992.
  - 1.15.8.4. Document 06/1000 is TGr agenda.
- 1.15.9. TGs – Donald Eastlake
  - 1.15.9.1. Will resolve comments on internal draft review. The agenda is in 06/827r4.
- 1.15.10. TGt – Charles Wright
  - 1.15.10.1. Since May, there has been an internal review of draft 0.8. Will review and resolve this week. Comments are in 06/872r1.
- 1.15.11. TGu – Steven McCann.
  - 1.15.11.1. Agenda in 06.946r1. Will conduct downselection of proposals. Will review liaisons, and letters needed to other organizations.

- 1.15.12. TGv – Pat Calhoun
  - 1.15.12.1. Agenda in 06/927r1. Agenda is full, so no new submissions can be accepted.
  - 1.15.12.2. Preparing for internal review in November and ballot in March 2007.
- 1.15.13. TGw – Jesse Walker
  - 1.15.13.1. TGw will meet 3 times this week. Will resolve final comments from internal review. Hopefully will be ready for Letter Ballot
  - 1.15.13.2. JTC1: The ballot resolution meeting in June approved 802.11i as the international standard. The JTC1 ad-hoc has no further work. ExCom believes the appropriate ISO liaison in at the 802 level. There has been a re-examination of joint development between ISO and 802.
- 1.15.14. TGy – Peter Ecclesine
  - 1.15.14.1. Peter is pro-tem chair, and is the current only nominee. Stuart asks that any further nominations be submitted to TGY.
  - 1.15.14.2. Agenda in 06/754r2. Will start with chair election. Will discuss PHY matters in first session. Document 06/955 and 855.
  - 1.15.14.3. MAC matters on Thursday 06.867 and 864.
  - 1.15.14.4. Will try to produce a first draft and vote on Thursday
  - 1.15.14.5. Vote on chair will be 11:00 Tuesday.

### **1.16. Closing**

- 1.16.1. Any other business?
  - 1.16.1.1. None
- 1.16.2. Announcement
  - 1.16.2.1. FTP information is in 06/994r1.
- 1.16.3. Recessed at 15:26

## **2. Midweek Plenary, Wednesday, July 19, 2006**

### **2.1. Opening**

- 2.1.1. The meeting is called to order at 10:38 by Stuart J. Kerry.
- 2.1.2. Following the agenda in 06/754r3
- 2.1.3. There are 247 people in the room.

### **2.2. Agenda**

- 2.2.1. Additional items are added in section 4.1 and 5.1 are added.
- 2.2.2. There are no other additions or modifications.
- 2.2.3. The agenda is approved with unanimous consent

### **2.3. IEEE SA Letters of assurance**

- 2.3.1. Members are all aware of patent policies.
- 2.3.2. The members assent to adhere
- 2.3.3. There are no LOAs or patents that the chair needs to be aware of.

### **2.4. Announcements**

- 2.4.1. Chairs are requested to attend the CAC meeting Thursday
- 2.4.2. TGM has completed its work for the week, and are returning slots to the WG.
  - 2.4.2.1. Stuart asks if any chairs need additional slots.
  - 2.4.2.2. TGT requests PM1 Thursday.

- 2.4.2.3. The room size is limited
- 2.4.2.4. TGw could use the PM1 slot.
- 2.4.2.5. Stuart will take this as an action item to work out after this session. There is no dissent.

## 2.5. Attendance

- 2.5.1. No updates or changes
- 2.5.2. All members are familiar with the system and have no questions.

## 2.6. Reports from Liaisons

- 2.6.1. 802.18 – Denis Kuahara
  - 2.6.1.1. Report in 06/989r1
  - 2.6.1.2. Working on updating ITU-R M.1450 document. RR-TAG approved the updated document.
  - 2.6.1.3. Developing comments on Ofcom consultation on higher power devices.
  - 2.6.1.4. FCC is concerned with potential of interference from 802.11n. We are waiting for FCC official position.
  - 2.6.1.5. RR-TAG does not want to change requirements for 5120 band.
  - 2.6.1.6. Planning liaison with P11073 for wireless medical equipment.
  - 2.6.1.7. Discussion
    - 2.6.1.7.1. Requests expansion of the FCC issue with 11n interference.
    - 2.6.1.7.2. Denis says we are not taking any action until the FCC issues a comment. This was from informal discussion with FCC members.
    - 2.6.1.7.3. Stuart directs the RR-TAG to continue to track this issue.
    - 2.6.1.7.4. The concern is specifically with Pre-N devices.
- 2.6.2. 802.19 – Sheung Li
  - 2.6.2.1. There were three items on the .19 agenda.
  - 2.6.2.2. 802.19 reviewed the 802.11n CA document. 11n may provide additional input regarding Bluetooth and Zigbee.
  - 2.6.2.3. There was an informational presentation from TGT, regarding new tests for assessing the interference between 802.11n and Bluetooth. Requests TGk to present measurement mechanism to 802.19 for use in coexistence mitigation.
  - 2.6.2.4. 802.19 suggests that TGy should provide analysis of their protocol.
  - 2.6.2.5. Peter asks that the members who created the 802.11n CA document volunteer to create one for TGy
- 2.6.3. 802.21 – David Hunter
  - 2.6.3.1. Report in 06/1067r0
  - 2.6.3.2. Media Independent Handover – between heterogeneous networks. Transition between 802.11 and other 802 networks.
  - 2.6.3.3. 802.21 Tutorial will be posted at 802 tutorials site.
  - 2.6.3.4. 802.21 can be implemented as a layer 2.5 above the MAC.
  - 2.6.3.5. 802.21 is currently in Letter Ballot, with an upcoming recirculation. LB1 had only 26% approval.
  - 2.6.3.6. Held joint meeting with 802.11u, and tracking developments in 802.11r.
- 2.6.4. 802.22 – open position
  - 2.6.4.1. Any volunteers for liaison? There are none.
- 2.6.5. 802 Architecture Group
  - 2.6.5.1. Roger Durand presents 06/1065r1
  - 2.6.5.2. Attempts to address architectural issues with a cross-WG consensus.
  - 2.6.5.3. Areas of discussion in July: Audio Video Sync,

- 2.6.5.4. Areas of possible future work: E911, QoS across 802, 802.3 link aggregation, Service interface harmonization across 802, power management & energy consumption, 64bit vs. 48 bit MAC addresses issues for bridging.
- 2.6.5.5. Wireless Architecture is now an official subgroup of 802 architecture. We are working on a tutorial. There is some consideration of whether wireless architecture should become a working group.
- 2.6.5.6. There are concerns that the architecture groups are non-productive due to inter-WG divisions and rivalries.
- 2.6.6. **WiFi Alliance – Clint Chaplin**
  - 2.6.6.1. Report in 06/1073r0
  - 2.6.6.2. Last meeting in June.
  - 2.6.6.3. TGn status. First testbed plugfest is this month. There was also a compatibility test event in June.
  - 2.6.6.4. Enterprise voice MRD has been approved, working on test plan.
  - 2.6.6.5. Simple Config has been accepted by board, and tech group is now working on test plan.
- 2.6.7. **JC61 – Tim Wakeley**
  - 2.6.7.1. Not Present – 3<sup>rd</sup> call. The liaison position is open.
- 2.6.8. **IETF – Dorothy Stanley**
  - 2.6.8.1. Report in document 06/1018r0
  - 2.6.8.2. IETF met last week in Montreal.
  - 2.6.8.3. IETF requests 802.11 inputs on EAP Keying draft v14.
  - 2.6.8.4. Network selection document on last call. TGu may have comments.
  - 2.6.8.5. IETF is working on benchmarking methodology – IETF asks if an 802.11 switch is in scope. This has been assigned to TGT to make a determination.
  - 2.6.8.6. CAPWAP WG has generated documents for objectives and evaluation = available as RFCs. Now at Version 2.
  - 2.6.8.7. Geographic location and privacy group has updated their document.
- 2.6.9. **JTC1/SC6 – Jesse Walker**
  - 2.6.9.1. 802.11i has been ratified as an international standard. SC6 is reviewing the working agreement between 802 and SC6. Comments are due to JTC1 editor in November. 802 will evaluate in ExCom.
  - 2.6.9.2. Stuart notes that 802.11g, h, and I were all on the list.
  - 2.6.9.3. Stuart thanks Jesse for the effort in this ad hoc group.
- 2.6.10. **3GPP – Sabine Demel**
  - 2.6.10.1. Presentation in document 06/1066r1
  - 2.6.10.2. 802.11u created liaison letter to 3GPP SA3 regarding the need for MAC address anonymity. TGu will continue discussion on Thursday.
- 2.6.11. **TIA – Ariel Sharon**
  - 2.6.11.1. No presentation
  - 2.6.11.2. TIA is considering broadband for safety. Considering 802.11 and 802.16. 802.11s is suitable and working for use cases in simulation.
- 2.6.12. **3GPP2**
  - 2.6.12.1. Open position. There are no volunteers.

## 2.7. **Agenda Change**

- 2.7.1. Stuart asks to move up item 5.1 to before the WNG session
- 2.7.2. The agenda modification is approved with unanimous consent

## 2.8. **Item 5.1 RR-TAG document approval**

- 2.8.1. Denis Kuahara presents document 18-06-0035-03-0000\_Annotated\_document (M.1450\_r1).doc
- 2.8.2. This document needs to be filed with ITU-R.
- 2.8.3. The document has been edited and updated. Denis reviews the changes, which removed a lot of obsolete information, and adds new information such as 802.11j.
- 2.8.4. The document describes frequency bands, channelization, occupied bandwidth, power, spectrum mask, etc.
- 2.8.5. Questions from the floor
  - 2.8.5.1. There is a mis-spelling of Hiperlan. There are two types of Hiswan.
  - 2.8.5.2. This document addresses IEEE-specifics only. Therefore details related to other standard are not germane.
- 2.8.6. Move to approve the content of RR-TAG document doc: 11-06-1020-03-0000\_Annotated\_document (M.1450\_r1).doc, related to the 802.11 parameters
  - 2.8.6.1. Moved Denis Kuahara
  - 2.8.6.2. Second Peter Ecclesine
  - 2.8.6.3. Vote: Motion passes 85:0:29

## 2.9. *WNG*

- 2.9.1. The 802.11 working group recesses for the Wireless Next Generation Standing Committee session
- 2.9.2. The WNG standing committee agenda is in 06/944r2
- 2.9.3. The WNG minutes are contained in document. <...>

## 2.10. *Recess*

- 2.10.1. The meeting is recessed at 12:30pm

## 3. **Closing Plenary, Friday, July 21, 2006**

### 3.1. *Opening*

- 3.1.1. The meeting is called to order by Stuart J. Kerry at 08:10
- 3.1.2. There are 133 people in the room.

### 3.2. *Agenda*

- 3.2.1. The Agenda is in 06/754 r4
- 3.2.2. Stuart reviews the agenda for the body
- 3.2.3. There are new items
  - 3.2.3.1. Appeals information
  - 3.2.3.2. WG Policies and Procedures additions
  - 3.2.3.3. ITU-R input from RR-TAG, document update.
- 3.2.4. Further changes from the floor
  - 3.2.4.1. Jon Rosdahl suggests the TGn Ad Hoc financial report. It will be presented in the TGn update.
- 3.2.5. Approval
  - 3.2.5.1. The agenda is approved with unanimous consent

### 3.3. *Letters of Assurance*

- 3.3.1. The chair has not received any other LOAs.
- 3.3.2. The chair verifies that the bodies are aware of patent law and our rules and regulations pertaining.

**3.4. *Announcements***

- 3.4.1. The Meeting Reports from chairs are due in one week.

**3.5. *WG Documentation update***

- 3.5.1. Harry Worstell describes the new system that is being developed to replace 802wirelessworld. We have been working with the IEEE IT staff.

**3.6. *Policies and Procedures***

- 3.6.1. Al Petrick presents document 06/1011r1 on the P&P update. The newest P&P is document 06/812r2. It will be approved in a motion later this morning.

**3.7. *Appeals and Reflector Information Update***

- 3.7.1. Harry Worstell presents document 06/1129r1, describing how the IEEE appeals process operates:

July 2006

doc.: IEEE 802.11-06/1129r1

### Appeal Tutorial

Date: 2006-19-07

**Authors:**

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Submission Slide 1 Harry Worstell, AT&T

July 2006

doc.: IEEE 802.11-06/1129r1

### Appeal Tutorial

- **Prior to an appeal, a significant attempt should be made to resolve concerns informally**
- If the informal attempts to resolve a concern are unsuccessful and a formal complaint is filed

**Appeal brief**

- Appellant shall file a written appeal brief with the WG Secretary within 30 days after the date of notification/occurrence of an action or at any time with respect to inaction.
- Appeal brief shall :
  - State the nature of the objection(s) including any resulting adverse effects
  - The clause(s) of the procedures or the standard(s) that are at issue
  - Actions or inaction that are at issue
  - The specific remedial action(s) that would satisfy the appellant's concerns
  - Previous efforts to resolve the objection(s) and the outcome of each shall be noted.

Submission Slide 2 Harry Worstell, AT&T

July 2006

doc.: IEEE 802.11-06/1129r1

**Appeal brief (cont)**

- Appellant shall include complete documentation of all claims in the appeal brief.
- Within 20 days of receipt of the appeal brief WG Secretary :
  - shall send the appellant a written acknowledgment of receipt of the appeal brief
  - shall send the appellee (the Chair of the WG) a copy of the appeal brief and acknowledgment,
  - shall send the parties a written notice of the time and location of the hearing ("hearing notice") with the appeals panel
  - Hearing with the appeals panel shall be scheduled at the location set for, and during the period of, the first plenary session that is at least 60 days after mailing of the hearing notice by the WG Secretary

Submission Slide 3 Harry Worstell, AT&T

July 2006

doc.: IEEE 802.11-06/1129r1

**Reply brief**

- Within 45 days after receipt of the hearing notice
  - Appellee should send the appellant and WG Secretary a written reply brief
  - Appellee shall specifically addressing each allegation of fact in the appeal brief to the extent of the appellee's knowledge
  - Appellee shall include complete documentation supporting all statements contained in the reply brief

Submission

Slide 4

Harry Worstel, AT&T

July 2006

doc.: IEEE 802.11-06/1129r1

**Appeals Panel**

- IEEE 802 WG Chair
  - Shall appoint from the appeals pool an appeals panel consisting of:
    - A chair
    - Two other members of the panel
      - Who have not been directly involved in the matter in dispute
      - Who will not be materially or directly affected by any decision made or to be made in the process of resolving the dispute
    - At least two members shall be acceptable to the appellant
    - At least two shall be acceptable to the appellee
  - If the parties to the appeal cannot agree on an appeals panel within a reasonable amount of time, the whole matter shall be referred to the WG Chair for consideration utilizing the Chair's Advisory Committee where applicable.

Submission

Slide 5

Harry Worstel, AT&T

July 2006

doc.: IEEE 802.11-06/1129r1

**Conduct of the Hearing**

- Hearing shall be open
  - Except under the most exceptional circumstances
  - At the discretion of the WG chair
- Appellant has the burden of demonstrating
  - Adverse effects
  - Improper actions or inaction
  - The efficacy of the requested remedial action
- Appellee has the burden of demonstrating
  - The committee took all actions relative to the appeal in compliance with its procedures
  - The requested remedial action would be ineffective or detrimental
- Each party may adduce other pertinent arguments,

Submission

Slide 6

Harry Worstel, AT&T

July 2006 doc.: IEEE 802.11-06/1129r1

#### Conduct of the Hearing (cont.)

- Members of the appeals panel may address questions to individuals before the panel
- Appeals panel shall only consider documentation included in the appeal brief and reply brief, unless
  - Significant new evidence has come to light; and
  - Such evidence reasonably was not available to the appellant or appellee, as appropriate, at the time of filing; and
  - Such evidence was provided by the appellant or appellee, as appropriate, to the other parties as soon as it became available.
- Information shall be provided at least two weeks before the date of the appeals panel hearing.

Submission Slide 7 Harry Worstel, AT&T

July 2006 doc.: IEEE 802.11-06/1129r1

#### Appeals Panel Decision

- Appeals panel shall
  - Render its decision in writing within 30 days of the hearing
  - Stating findings of fact and conclusions
    - With reasons there for, based on a preponderance of the evidence
  - Consideration may be given to the following positions, among others, in formulating the decision
    - Finding for the appellant,
      - Remanding the action to the appellee, with a specific statement of the issues and facts in regard to which fair and equitable action was not taken
    - Finding against the appellant,
      - with a specific statement of the facts that demonstrate fair and equitable treatment of the appellant and the appellant's objections
    - Finding that new, substantive evidence has been introduced
      - remanding the entire action to the appropriate group for reconsideration

Submission Slide 8 Harry Worstel, AT&T

July 2006 doc.: IEEE 802.11-06/1129r1

#### Request for Re-hearing

- Decision of the appeals panel shall become final 30 days after it is issued
  - unless one of the parties files a written notice of request for re-hearing prior to that date with the WG Secretary in which case the decision of the appeals panel shall be stayed pending review by the WG Chair utilizing the Chair's Advisory Committee where applicable.
- At that time, the WG Chair shall decide
  - To adopt the report of the appeals panel, and thereby deny the request for re-hearing; or
  - To direct the appeals panel to conduct a re-hearing.
- Further complaints if a re-hearing is denied shall be referred to the LMSC Chair.

Submission Slide 9 Harry Worstel, AT&T

- 3.7.2. Stuart states that this policy does not preclude members from going directly to the 802 or IEEE standards board. This is the procedure for 802.11 as decided by the WG chair.
- 3.7.3. Harry presents the procedures for reflectors in document 06/1130r0
- 3.7.4. Harry shows the link for reflector requests on the 802.11 home page. It is on the front page of the web site under the document search and retrieval engine section. It is also available from the menus.

- 3.7.5. Members must have attended a meeting with at least 75% attendance.
- 3.7.6. The WG reflector is mandatory.
- 3.7.7. Members can be removed from the reflector with a link on this page and clicking the "leave" button. Members should not send remove requests to the reflector.
- 3.7.8. Reflectors are for official business of the WG or Task Groups only, limited to primarily technical presentations.
- 3.7.9. Many members' companies put email confidentiality notices at the end of emails. This is not allowed per IEEE rules. Members that post such messages will be removed from the reflector. Members are encouraged to work with their IT departments to suppress such messages when posting to IEEE reflectors. IEEE reflectors are publicly disseminated to members and posted to public website archives.
- 3.7.10. Stuart asks if there are any questions. There are none.
- 3.7.11. Stuart notes that the P&P updates in each meeting will include a review of appeals and reflector use.

### **3.8. *Timeline Update***

- 3.8.1. Stuart notes that the timeline is used by IEEE, press, tracking of progress, and for archival purposes.
- 3.8.2. Tim Godfrey announces the changes to the timeline for this meeting.
  - 3.8.2.1. TGk – Moving first Sponsor ballot 1 Nov 06.
  - 3.8.2.2. TGm - there is a change for TGm
  - 3.8.2.3. T Gn - yes ( WG recirc / pool May 07, SB1 Sep 07, Final WG Jan 08. RevCom Mar 08, Pub Apr 08.
  - 3.8.2.4. TGp
  - 3.8.2.5. TGr
  - 3.8.2.6. TGs
  - 3.8.2.7. TGt
  - 3.8.2.8. TGu
  - 3.8.2.9. TGv -v (add 6 months)
  - 3.8.2.10. TGw - Push out one meeting
  - 3.8.2.11. TGy

### **3.9. *WG Editors Report***

- 3.9.1. Simon Barber presents document 06/1131r0
- 3.9.2. 802.11g and 802.11h are close the end of the ISO SC6 approval process. No further internationalization is underway.
- 3.9.3. The editors' guideline document was updated. It is 06/530r1.

### **3.10. *Straw Poll on meeting location***

- 3.10.1. Stuart asks members their opinions on the meeting:
  - 3.10.1.1. Did you think this was a good location? It is apparently unanimous that members liked the location.
  - 3.10.1.2. Did any members have network problems? Only 802.1x was a problem this week.
  - 3.10.1.3. About a dozen members hated the social. Many members want the social improved.

- 3.10.1.4. Stuart J. Kerry notes that there is an effort to improve the social for November.

### **3.11. WNG Report – Al Petrick for TK Tan**

- 3.11.1. Report in document 06/1123r1
- 3.11.2. Presentations
  - 3.11.2.1. 802.11 amendments to support Consumer Electronic Applications: Technical Requirements (11-06-0898r2)
  - 3.11.2.2. Layer 3 based MESH networking (11-06-0916r1)
  - 3.11.2.3. MIMO-OFDM Beamforming (11-06-0979r0)
  - 3.11.2.4. Multi-media challenges for IEEE 802.11 (11-06-0892r1)
  - 3.11.2.5. WLAN for next generation AV: Motion for SG Creation (11-06-1021r1)
- 3.11.3. A motion to form an AV Study Group was approved.
- 3.11.4. Comments
  - 3.11.4.1. Stuart notes that the purpose of the mid-week WNG session in the WG plenary was for tutorials and interchange of information – not a continuation of business. The format of the session will be changed in the next meeting.

### **3.12. TGk – Richard Paine**

- 3.12.1. Report in document 06/1121r0
- 3.12.2. Objectives were to complete LB83 comment resolution, initiate a recirculation ballot, and transition to the new editor (Joe Kwak).
  - 3.12.2.1. Stuart notes that Simon Barber will continue at co-technical editor for the WG
- 3.12.3. 210 comments were resolved
- 3.12.4. Sept Objectives – process comments from Recirc ballot, hopefully go to another Recirc or Sponsor ballot.
- 3.12.5. November objectives – start sponsor ballot.
- 3.12.6. Will have teleconferences starting 7/27
- 3.12.7. Discussion of Disassociate Imminent issue
  - 3.12.7.1. There 04/330r0 is the minutes from the meeting when this comment was processed. The resolution was to remove disassociate imminent. The text for the vote was on the server for a week. The editor was present and had sufficient information to complete.
  - 3.12.7.2. Marty met with the chairs in March 06. The CAC decided to put Disassociate Imminent re-insertion to a vote. Richard formed a document (06/925r0) and brought it to a vote. The vote was 7 : 19 : 4 ) 27% approval.
- 3.12.8. The motion for recirculation of TGk will be brought up later in this meeting
- 3.12.9. Discussion
  - 3.12.9.1. Roger Durand states that the facts in document1121r0 reflect only half of the argument.

### **3.13. TGma / ANA – Bob O'Hara**

- 3.13.1. Report in 06/1019r0 (shortened version)
- 3.13.2. Goals were to process interpretation request, process comments on 2<sup>nd</sup> Recirc ballot, and start 3<sup>rd</sup> recirculation ballot.
- 3.13.3. 90 comments were received. 43 were processed and resolutions were adopted, and 47 were assigned to the editor. All comments were addressed.

- 3.13.4. There will be motions brought forward later in this meeting. The motions will request to approve resolutions, and start 3<sup>rd</sup> sponsor recirculation ballot.
- 3.13.5. The interpretation request had to do with interaction of RTS/CTS and fragmentation. The response was that the standard is unambiguous, although not easy to locate the information.
- 3.13.6. Another motion will be brought forward to accept the response.
- 3.13.7. ANA update – there will be motions later this morning for assignment of management actions.

### **3.14. *Aside Comments***

- 3.14.1. Stuart notes that TGk has not started sponsor ballot, but the pool has to be re-formed. The TGk Sponsor Ballot pool will issue an invitation to refresh. Members who wish to remain in the pool should respond to the invitation. It is a re-start

### **3.15. *TGn – Bruce Kraemer***

- 3.15.1. Report in document 06/1122r0
- 3.15.2. There were 4 parallel ad-hoc groups to prepare comment resolutions, and several all-hands sessions to approve comment resolutions with the entire TG.
- 3.15.3. Coming into the meeting 43% of comments had been addressed.
- 3.15.4. At the end of this week, 49% of the comments have been addressed. Some categories are nearly completed, but some of the more difficult topics still need more work.
- 3.15.5. There was considerable work on editorial issues. We have completed editorial comment resolutions for about 6700 editorial changes. The resolutions were approved and submitted as a TGn draft 1.02. Submission 06/1043 is a pointer to the draft.
- 3.15.6. There are a set of spreadsheets for comment resolutions.
- 3.15.7. TGn will continue teleconferences weekly and there will be ad-hoc comment resolution meetings before September and November meetings, and one in October 17-19.
- 3.15.8. Jon Rosdahl presents the financial report for the ad-hoc meeting.
  - 3.15.8.1. These are un-audited preliminary results. The estimate was for 50 attendees. The budget was \$16,282. Jon thanks Qualcomm for contributing \$5000 to defray costs. There was a meeting fee of \$230. There were 59 attending. There was a remaining balance (estimated) of about \$300. There is still a question of how much the credit card charges are, and an outstanding shipping bill. These results will be sent to the wireless treasurer, with supporting receipts.
  - 3.15.8.2. Stuart J. Kerry states that Al Petrick will verify with the IEEE treasurer that all policies and procedures were followed.
  - 3.15.8.3. Any residual money will go to Face To Face events, not the Wireless Treasury.
  - 3.15.8.4. Adrian Stephens notes that \$1000 for handling 50 registrations seems to be excessive.
- 3.15.9. Bruce Kraemer congratulates the membership and editors on the excellent progress that is being made.

**3.16. TGp – Harry Worstell for Lee Armstrong**

- 3.16.1. Report in document 06/1116r0
- 3.16.2. TGp continued comment resolution for LB81.
- 3.16.3. There were 3 sessions.
- 3.16.4. The TG voted to use the previous TGp draft as the baseline for moving forward.
- 3.16.5. There were 6 presentations
- 3.16.6. The group continued comment resolution on clause 20.
- 3.16.7. Presentations
  - 3.16.7.1. Liaison Report - ISO,
  - 3.16.7.2. Liaison Report - P1609
  - 3.16.7.3. 11-06-0890-03-000p-waveupdates-clauses5-7-9-10-11
  - 3.16.7.4. 11-06-1005-00-000p-medium-congestion-control-framework
  - 3.16.7.5. 11-06-1017-02-000p-wave-motion-related-channel-model-development
- 3.16.8. Will have draft ready for approval after the September 2006 meeting.
- 3.16.9. Thanks to Harry Worstell for chairing this week

**3.17. TGr - Clint Chaplin**

- 3.17.1. Report in 06/1119r2
- 3.17.2. Clint notes that there are 28 comments that need to be re-addressed
- 3.17.3. Presentations
  - 3.17.3.1. 11-06-0685-00-000r-resource-query-procedures.doc
  - 3.17.3.2. 11-06-0814-01-000r-rdie-status-codes.doc
  - 3.17.3.3. 11-06-0815-01-000r-rdie-without-count.doc
  - 3.17.3.4. 11-06-0819-01-000r-d2-1-checkup.xls
  - 3.17.3.5. 11-06-0832-02-000r-preauthentication.doc
  - 3.17.3.6. 11-06-0903-02-000r-qos-resource-construction.doc
  - 3.17.3.7. 11-06-0948-01-000r-updates-to-tgr-security-clauses.doc
  - 3.17.3.8. 11-06-0961-00-000r-identifying-cached-pmk-r1s-during-fast-transition.doc
  - 3.17.3.9. 11-06-0999-01-000r-make-before-break-tentative-reassociation.doc
  - 3.17.3.10. 11-06-1035-01-000r-d2-1-updates.ppt
  - 3.17.3.11. 10 documents
- 3.17.4. There will be an ad-hoc August 22nd through August 24th in Santa Clara, California
- 3.17.5. There will be weekly teleconferences
- 3.17.6. Draft 2.2 has been developed and is available.
- 3.17.7. In September, TGr will continue LB82 comment resolutions.

**3.18. TGs – Donald Eastlake**

- 3.18.1. Report in document 06/1126r0
- 3.18.2. The task group has been addressing comments from the informal review, and from new presentations.
- 3.18.3. A new draft incorporating these changes will be developed as D0.03

- 3.18.4. There will be teleconferences starting August 2<sup>nd</sup>.
- 3.18.5. In September, TGs will complete resolutions of comments, and conduct Letter Ballot

### **3.19. TGT – Charles Wright**

- 3.19.1. Report in document 06/1004r0
- 3.19.2. There were 14 hours of meeting time.
- 3.19.3. Started comment resolution from internal review.
- 3.19.4. 20 of 201 comments were resolved, and 10 presentations were heard.
- 3.19.5. BMWG liaison with IETF – straw poll indicated TGT did not want to take up this work.
- 3.19.6. In September, the TG will continue comment resolution. Expect to have a draft for Letter Ballot in November.

### **3.20. TGu – Stephen McCann**

- 3.20.1. Report in document 06/ 1125r0
- 3.20.2. There were 6 proposal presentations, 3 were approved:
  - 3.20.2.1. SSPN Interface
  - 3.20.2.2. User Plane
  - 3.20.2.3. Emergency Calls
- 3.20.3. The editor will form a baseline document for review in September.
- 3.20.4. There will be revised presentations for Authentication, Network Selection, and MIH (Media Independent Handover) in September.
- 3.20.5. There were liaison interchanges with:
  - 3.20.5.1. 3GPP SA3 (11-06-1095r0)
  - 3.20.5.2. ETSI TISPAN (11-06-1094r0)
  - 3.20.5.3. TR 41.4 (11-06-1113r0)
  - 3.20.5.4. IETF EAP (11-06-1114r0)
- 3.20.6. Stuart J. Kerry notes that Stephen will not be present in September, so Harry Worstell will serve as TGu Chair.

### **3.21. TGv – Pat Calhoun**

- 3.21.1. Report in 06/0927r4
- 3.21.2. Submissions:
  - 3.21.2.1. 11-06-0498-01-000v-transmitpowermanagement
  - 3.21.2.2. 11-05-1068-04-000v-multilevelrfpower
  - 3.21.2.3. 11-06-0646-03-000v-interference-diagnostic-presentation
  - 3.21.2.4. 11-06-0956-00-000v\_Preferred\_Channel\_Power\_Saving.ppt
  - 3.21.2.5. 11-06-0636-01-000v-standby-time-improvements
  - 3.21.2.6. 11-06-0711-01-000v-managed-object-request-response
  - 3.21.2.7. 11-06-0737-00-000v-application-layer-location
  - 3.21.2.8. 11-06-0656-00-000v-wlan-paging-power-saving
  - 3.21.2.9. 11-06-0950-00-000v-WLAN Paging and Idle Mode
  - 3.21.2.10. 11-06-0947-00-000v-bc-and-mc-enhancements
  - 3.21.2.11. 11-06-0984-00-000v-time-synchronization-over-802-3-and-802-11-lans-av-applications

- 3.21.2.12. 11-06-0975-00-000v-Dynamic signaling of parameter for target network behavior and operation
- 3.21.2.13. 11-06-0388-03-000v-bss-channel-switch
- 3.21.3. Pat notes that some objectives have low interest.
- 3.21.4. The first Letter ballot has been pushed out by 6 months.
- 3.21.5. One proposal was adopted - 11-06-0947-00-000v-bc-and-mc-enhancements
- 3.22. TGw and JTC1/SC6 – Jesse Walker**
  - 3.22.1. Report in document 06/1115r0
  - 3.22.2. Heard 16 submissions, resolved all but 2 issues from internal review.
  - 3.22.3. Will not go to letter ballot at this meeting.
  - 3.22.4. Jesse Walker will not be available in September. Donald Eastlake will serve as substitute chair, per Stuart's approval.
  - 3.22.5. There are outstanding issues in CCMP forgery protection. There are two proposals under consideration.
    - 3.22.5.1. Proposal 1: document 11-06-1063-01: allocate a reserved bit in the CCM Nonce to indicate management frame
      - 3.22.5.1.1. Issue: Concern that some implementations may not support this
      - 3.22.5.1.2. Motion to adopt 11-06-1063-01 failed 9-6-3
    - 3.22.5.2. Proposal 2: document 11-06-1080-00: set the priority used in the CCMP construction to 0x00 (priority not available in management frames)
      - 3.22.5.2.1. Issue: A key reuse attack exists against the 11-06-1080 construction (see 11-06-929)
      - 3.22.5.2.2. Motion to adopt 11-06-1080-00 failed 7-8-2
  - 3.22.6. Both presentations were rejected due to issues
  - 3.22.7. Issue with Use of MIC information element to protect against broadcast forgeries
    - 3.22.7.1. Requires this MIC to be the last information element in a management message
    - 3.22.7.2. This causes extensibility problems
    - 3.22.7.3. 11-06-1107-00 proposes an elegant solution
    - 3.22.7.4. Define a new secure broadcast management frame format that includes a fixed field MIC after the data field that legacy STAs will parse as an information element
  - 3.22.8. Goals for September
    - 3.22.8.1. Resolve the remaining two comments outstanding from the internal review
    - 3.22.8.2. Produce P802.11w D1.0
    - 3.22.8.3. Ask the Task Group to conduct a letter ballot for P802.11w D1.0
    - 3.22.8.4. Hear any other technical presentations relevant to the 802.11w PAR
  - 3.22.9. JTC1 report in 06/1118r0
    - 3.22.9.1. Passed motions to
      - 3.22.9.1.1. Recommend that the JTC1/SC6 SG be allowed to lapse (4-0-1)
      - 3.22.9.1.2. Recommend that the JTC1/SC6 Ad Hoc be converted to a Standing Committee (5-0-0)
      - 3.22.9.1.3. The SC would meet only upon need, e.g., to support the IEEE SA effort to decide on its long term international standards strategy
      - 3.22.9.1.4. Wrote document 11-06-1117, inviting China to collaborate with IEEE 802 to develop LAN standards

- 3.22.9.1.5. Ask the WG to forward 11-06-1117 to the IEEE 802 ExCom to forward to the Chinese agencies SAC, CESI, MOFCOM
- 3.22.9.1.6.
- 3.22.9.2. The JTC1 Study Group will lapse and not meet in September.
- 3.22.9.3. The JTC1 Ad-Hoc will convert to a Standing Committee, which can address issues with ISO as they arise in the future. The IEEE is trying to form a long term strategy for the relation between IEEE and ISO. This SC could provide a method for input.
- 3.22.9.4. We decided to renew the invitation to China to participate in developing WLAN standards. The ad-hoc committee didn't want to send the wrong message by simply dissolving the Study Group without attempting to foster further participation.
- 3.22.9.5. Stuart J. Kerry asks if there is any dissent for the decision to let the JTC1 SC6 Study Group Lapse.
  - 3.22.9.5.1. There is no dissent. So moved and approved.
- 3.22.9.6. Stuart J. Kerry states that he will convert the ad hoc to a standing committee in hibernation, per his authority as WG chair.
  - 3.22.9.6.1. Jesse Walker is appointed as the chair of the hibernating Standing Committee

### **3.23. TGy – Peter Ecclesine**

- 3.23.1. Document 06/1024r2
- 3.23.2. Adopted 855r3 as first draft
- 3.23.3. Heard presentation of Clause 17, Annex A PICS and Annex D MIB for an OFDM PHY CCA/Energy Detect option Concerns about Clause 17 OFDM PHY operation, how to bound changes to 3650-3700 MHz band only
- 3.23.4. Heard Presentation of 06/867r2, 864r2.
- 3.23.5. Work completed:
  - 3.23.5.1. The following normative text has been accepted and will be integrated into the TGy draft:
  - 3.23.5.2. 06/855r3 Annex I and J 3650 MHz Band
- 3.23.6. In September will talk about clear channel assessment, channel width.
- 3.23.7. Stuart J. Kerry states that there was a call for volunteers for TGy chair. The Task Group nominated and approved Peter Ecclesine with a vote of 30:2:0. Stuart J. Kerry accepts Peter Ecclesine as TGy chair, as recommended by the TG.

### **3.24. Old Business – WG Motions**

- 3.24.1. Move to empower the following TG(s)/SG(s)/Ad-Hoc(s) to hold teleconference calls beginning no sooner than August 1, 2006 through 15 days past the end of the November 2006 Plenary Session.

Group	Start Date	Frequency	Time
Task Group "k"	August 3, 2006	Weekly	12:00 ET
Task Group "m"	N/A	N/A	N/A
Task Group "n"	August 2, 2006	Weekly	11:00 ET
Task Group "p"	N/A	N/A	N/A
Task Group "r"	August 2, 2006	Weekly	11:00 ET
Task Group "s"	August 2, 2006	Weekly	17:00 ET
Task Group "T"	August 10, 2006	Bi-weekly	12:00 ET
Task Group "u"	August 17, 2006 September 6, 2006 October 4, 2006 November 2, 2006	Once Each	10:00 ET
Task Group "v"	N/A	N/A	N/A
Task Group "w"	August 17, 2006	Once	11:00 ET
Task Group "y"	August 15, 2006	Bi-weekly	13:00 ET

3.24.1.1. Moved Al Petrick

3.24.1.2. Second Peter E

3.24.1.3. Discussion

3.24.1.3.1. Charles Wright points out that some teleconferences start before the 15 day window in this motion. There may be teleconferences next week.

3.24.1.4. Vote: The motion is approved with unanimous consent

3.24.2. Move to empower the 802.11 WG, Task Groups, SGs, and SCs to hold meetings during the September 2006 Interim Session to conduct business as deemed necessary.

3.24.2.1. Moved Al Petrick

3.24.2.2. Second Pat Calhoun

3.24.2.3. Discussion

3.24.2.3.1. None

3.24.2.4. Vote: Motion approved with unanimous consent

3.24.3. Move that document doc:06/812r2 becomes the policies and procedures for IEEE 802.11WG, and be posted on the IEEE 802.11 WG website after the close of the IEEE 802.11WG July 2006 plenary.

3.24.3.1. Moved Al Petrick

3.24.3.2. Second Jon Rosdahl

3.24.3.3. Discussion

3.24.3.3.1. Stuart asks if any comments have been received. Al says there have been no comments received.

3.24.3.3.2. Jon Rosdahl states that the document is 06/812r2, but the actual posted document will be R3, and the redline markings will be removed. Content will not be changed otherwise. This motion is on the content of R2.

3.24.3.3.3. Adrian Stephens asks about changes in the draft posting policy. Does this reflect it?

3.24.3.3.4. Stuart J. Kerry states that there will be further amendment in the next revision regarding postings out of session.

3.24.3.3.5. There is a need for more explicit instructions for editors for posting intermediate drafts. Adrian offers to draft text.

3.24.3.3.6. Stuart J. Kerry states that Al and Adrian will work on changes for the next revision.

- 3.24.3.3.7. Al Petrick states that anyone with suggestions for changes should send email to him.
- 3.24.3.4. Vote: Motion passes 75 : 2 : 9
- 3.24.4. Motion: To approve the content of RR-TAG document 18-06/0050r0 related to the 8902.11 parameters in table 1 (key technical parameters)
  - 3.24.4.1. Moved Peter Murray
  - 3.24.4.2. Discussion
    - 3.24.4.2.1. Peter states that we are asking for two additional columns in the table: Uncoded / convolution coding. There is a new column for frame duration
    - 3.24.4.2.2. RR-TAG Asking for approval to add this to the document.
    - 3.24.4.2.3. Stuart asks if the document has been presented to the membership in time.
    - 3.24.4.2.4. Peter says it has missed the 4 hour rule. However it is only information that already exists, just being transferred to this document.
    - 3.24.4.2.5. Stuart J. Kerry asks who has reviewed the data in 802.11? Peter E, Jon R, and Naftali Chayat. Jon did not see anything in error.
    - 3.24.4.2.6. Anuj asks if this is only the mandatory modes of 11b and 11g. There are many optional modes.
    - 3.24.4.2.7. Peter says this is not meant to be comprehensive. There is an annex pointing to source documents in the standards.
    - 3.24.4.2.8. Anuj has an issue with the inconsistency of optional modes – should be either all options or none.
    - 3.24.4.2.9. Peter notes that the tables come from the ITU-R. We are just adding the relevant information.
    - 3.24.4.2.10. Stuart notes that we have two experts from our group to approve this data, since it is on a deadline.
    - 3.24.4.2.11. It has to be in Geneva in 2 weeks.
    - 3.24.4.2.12. Stuart J. Kerry will assign two experts to provide the content on behalf of this group.
    - 3.24.4.2.13. It has to go to ExCom.
    - 3.24.4.2.14. Stuart requests to defer this item to the end of the agenda
      - 3.24.4.2.14.1. There is no objection.
- 3.24.5. Move that the WNG SC recommends that the IEEE 802.11 WG form a Study Group to examine the performance requirements imposed on WLAN by multimedia applications.
  - 3.24.5.1. Moved Al Petrick on behalf of WNG SC
  - 3.24.5.2. Second Scott Henderson
  - 3.24.5.3. Discussion
    - 3.24.5.3.1. Andrew Myles is against the motion. There have been presentations regarding AV, which are typical marketing stuff. The problem has never been defined – why 802.11e or 802.11n will not satisfy the goals. 802.11 already has a huge number of Task Groups underway – we don't have time to look at this without a problem definition. Suggests that the proposers establish what the problem is to be solved.
    - 3.24.5.3.2. Stuart asks to limit debate to 15 minutes
      - 3.24.5.3.2.1. There is no objection.
    - 3.24.5.3.3. Each member may speak twice, alternating for and against.
    - 3.24.5.3.4. Ken Clements is for the motion. This is just a motion to study AV. We don't know if we have a problem until we study it.
    - 3.24.5.3.5. Adrian Stephens is against. In favor of looking at video in 802.11, but there doesn't seem to be a clear focus yet. Have we formed a turf

war with 802.1av? This work may infringe on 802.1av. Needs to see more research on where there are problems to solve. In reality, study groups don't find that there is nothing to do.

- 3.24.5.3.6. Charles Cook is for. Would like to use wireless to eliminate video cables in the home. Currently the technology does not support it. Need to figure out what can be done.
- 3.24.5.3.7. Clint Chaplin is against, for the reason of time. There are 10 task groups in 802.11. Besides TGma, none will finish their work before the end of 2007. This would diffuse our effort further.
- 3.24.5.3.8. Jesse Walker states that the motion is confusing. It references performance requirements – should it state that it would form a PAR and 5C.
- 3.24.5.3.9. Stephen McCann answers that the original motion as presented did include the words produce a PAR and 5C. Those words were removed in a motion to simplify the motion. It was felt that there was too much detail.
- 3.24.5.3.10. Jon Rosdahl is for the motion. Recognizes the time constraints, but the SG could be limited to a small number of hours. Feels that it is not necessary to include the words PAR and 5C in the formation motion. It is putting the end goal ahead of the process. The SG should determine whether a PAR and 5C is actually needed. It is possible that a PAR and 5C would not come out of the SG.
- 3.24.5.3.11. Garth comments that at the WNG meeting the PAR and 5C were in the original motion. It was accepted that a PAR and 5C is obvious, and not needed in the motion.
- 3.24.5.3.12. Ed points out that while a SG can dilute our resources, it has already been going on in WNG. It would be better to have a dedicated venue. It would not be a net change.
- 3.24.5.3.13. For the motion – this is not a static group. The group can grow to accommodate new work and activity.
- 3.24.5.3.14. For the motion – there is a strong interest from industry. Would promote the market and business.

3.24.5.4. Vote: motion fails 42 : 29 : 18 (59%, 75% required per 802.11 P&P)

3.24.5.4.1. *(Secretary's note: This motion was announced during the meeting as passing (greater than 50% approval), but after the meeting was adjourned, a review of the P&P revealed that a 75% majority was required. Therefore, the motion was not forwarded to ExCom, and these minutes have been updated to show the motion as failing)*

3.24.6. The meeting is recessed for 15 minutes.

3.24.6.1. The meeting will come to order at 10:40

3.24.7. Motion: to approve the issuance of a 10 day Procedural Letter Ballot, starting not later than 2006-8-9, asking the question; "Do you believe the TG "k" current draft is technically complete and ready for WG approval, e.g. no place holders or notes for future action, editing, or clarifications and vote to forward the draft of IEEE 802.11k to Working Group Recirculation Letter Ballot as Draft 5.0."

3.24.7.1. Moved Richard Paine on behalf of TGk

3.24.7.2. Discussion

3.24.7.2.1. The draft produced as the result of this week will be D5.0.

3.24.7.3. Question called with no objection

3.24.7.4. Vote: approved with unanimous consent

3.24.8. Believing that comment responses in 11-06/891R9 and the draft mentioned below satisfy WG 802.11 rules for letter ballot recirculation, Authorize a 15-day LB recirculation of 802.11k draft 5.0 assuming

approval of the current draft by a 10 day procedure LB. Letter Ballot recirculation to conclude no later than 2006-9-11.

3.24.8.1. Moved Richard Paine on behalf of TGk

3.24.8.2. Discussion

3.24.8.2.1. There is a comment marked as "deferred" in the spreadsheet.

3.24.8.2.2. Richard states that the comment has been withdrawn from the commenter.

3.24.8.2.3. Stuart verifies that that Richard and the Chairs have received copies of the email withdrawing the comment.

3.24.8.2.4. Stuart asks if there is any objection to inserting an exception for comment 716 as a friendly amendment.

3.24.8.2.4.1. There is no objection to the amendment

3.24.9. Motion as amended:

3.24.10. Believing that comment responses in 11-06/891R9 (except comment 716 which has been withdrawn by the commenter) and the draft mentioned below satisfy WG 802.11 rules for letter ballot recirculation, Authorize a 15-day LB recirculation of 802.11k draft 5.0 assuming approval of the current draft by a 10 day procedural LB. Letter Ballot recirculation to conclude no later than 2006-9-11.

3.24.10.1. Question called with no objection

3.24.10.2. Vote: The motion is approved with unanimous consent

3.24.11. Moved (on behalf of Task Group m): to approve all completed second sponsor recirculation ballot comment resolutions in document 06/918r1.

3.24.11.1. Moved Bob O'Hara on behalf of TGm

3.24.11.2. Discussion

3.24.11.2.1. Dave Bagby asks if there has been any action taken on his submission regarding IP issues.

3.24.11.2.2. Bob states that it was referred to the WG chair. The comments will be included and moved forward with the document.

3.24.11.2.3.

3.24.11.3. Question called with no objection

3.24.11.4. Vote: motion passes 52 : 1 : 1

3.24.12. Moved (on behalf of Task Group m): to request the chair of 802.11 to begin a third sponsor recirculation ballot, using 802.11REV-ma draft 8.0, once the draft becomes available. The recirculation ballot is to run for no less than 15 days and to conclude before the start of the 802.11 session in September 2006.

3.24.12.1. Moved Bob O'Hara on behalf of TGm

3.24.12.2. Question called with no objection

3.24.12.3. Vote: motion passes 54 : 1 : 1

3.24.13. Moved (on behalf of Task Group m): to accept document 06/963r0 as the response to the interpretation request on RTS/CTS behavior.

3.24.13.1. Moved Bob O'Hara on behalf of TGm

3.24.13.2. Editorial change (RTC to RTS) to motion made without objection

3.24.13.3. Question called with no objection

3.24.13.4. Vote: the motion is approved with unanimous consent

3.24.14. Moved: to request conditional approval from the 802 Executive Committee to forward 802.11REV-ma to REVCOM, upon successful

- completion of the requirements in the LMSC Policies and Procedures,  
Clause 21
- 3.24.14.1. Moved Bob O'Hara
  - 3.24.14.2. Second Andrew Myles
  - 3.24.14.3. Question called with no objection
  - 3.24.14.4. Vote: motion passes 53 : 0 : 3
- 3.24.15. Move to request the 802.11 Assigned Numbers Authority (ANA) to assign to 802.11 TGn a Category Code for "HT (High Throughput)"
- 3.24.15.1. Moved Bruce Kraemer on behalf of TGn
  - 3.24.15.2. Question called with no objection
  - 3.24.15.3. Vote: the motion is approved with unanimous consent
- 3.24.16. Move to request the ANA to assign a value for an Action Value for Vendor-specific Action Frame
- 3.24.16.1. Moved Bob O'Hara
  - 3.24.16.2. Second Harry Worstell
  - 3.24.16.3. Question called with no objection
  - 3.24.16.4. Vote: motion passes 39 : 1 : 8
- 3.24.17. Request authorization for TGn to conduct an ad hoc meeting for the purpose of comment resolution from Wednesday 13-September through Friday 15-September, 2006 at the Melbourne Exhibition Centre, Melbourne, AU.
- 3.24.17.1. Moved Bruce Kraemer
  - 3.24.17.2. Question called with no objection
  - 3.24.17.3. Vote: Approved with unanimous consent
- 3.24.18. Request authorization for TGn to conduct an ad hoc meeting for the purpose of comment resolution from Wednesday 18-October through Friday 20-October, 2006 at or near the Hyatt Great America, Santa Clara, CA.
- 3.24.18.1. Moved Bruce Kraemer
  - 3.24.18.2. Question called with no objection
  - 3.24.18.3. Approved with unanimous consent
- 3.24.19. Request authorization for TGn to conduct an ad hoc meeting for the purpose of comment resolution from Wednesday 8-November through Friday 10-November, 2006 at or near the Dallas Hyatt Regency, Dallas, Texas.
- 3.24.19.1. Moved Bruce Kraemer
  - 3.24.19.2. Question called with no objection
  - 3.24.19.3. Vote – motion approved with unanimous consent
  - 3.24.19.4. MOTION: Hold an IEEE 802.11 TGr ad-hoc meeting October 17-19, 2006.
  - 3.24.19.5. Moved Clint Chaplin on TGr
  - 3.24.19.6. Question called with no objection
  - 3.24.19.7. Vote: motion approved with unanimous consent
- 3.24.20. Move that IEEE 802.11 WG approve the liaison document 11-06-1124r0 and request the IEEE 802.11 WG chair to forward it to the IETF.
- 3.24.20.1. Moved Stephen McCann
  - 3.24.20.2. Discussion

- 3.24.20.2.1. Stephen presents the background to his motions in an un-numbered document.
- 3.24.20.2.2. Topics are: TGu emergency call support, MAC address anonymity, IETF EAP netsel
- 3.24.20.3. Second Charles Wright
- 3.24.20.4. Question called with no objection
- 3.24.20.5. Vote: motion passes 39 : 0 : 5
- 3.24.21. Move that IEEE 802.11 WG approve the liaison document 11-06-1094r0 and request the IEEE 802.11 WG chair to forward it to ETSI TISPAN.
  - 3.24.21.1. Moved Stephen McCann
  - 3.24.21.2. Second Charles Wright
  - 3.24.21.3. Question called with no objection
  - 3.24.21.4. Vote: motion passes 47 : 0 : 6
- 3.24.22. Move that IEEE 802.11 WG approve the liaison document 11-06-1095r0 and request the IEEE 802.11 WG chair to forward it to 3GPP SA3.
  - 3.24.22.1. Moved Stephen McCann
  - 3.24.22.2. Second Charles Wright
  - 3.24.22.3. Discussion
    - 3.24.22.3.1. TGu didn't discuss this during the week. Andrew Myles notes that there were additional comments from a member to be added to the draft letter. Was the addition incorporated?
    - 3.24.22.3.2. Stephen confirms that the sentence has been incorporated.
    - 3.24.22.3.3. The added sentence was: "We are also seeking your perspectives on the method by which an attacker will bind the user's identity to the MAC address and why assigning a temporary MAC address appears to be the only viable solution for location privacy."
  - 3.24.22.4. Question called with no objection
  - 3.24.22.5. Vote: motion passes 46 : 0 : 6
- 3.24.23. Move that IEEE 802.11 WG approve the liaison document 11-06-1113r0 and request the IEEE 802.11 WG chair to forward it to TIA TR 41.4.
  - 3.24.23.1. Moved Stephen McCann
  - 3.24.23.2. Second Harry Worstell
  - 3.24.23.3. Question called with no objection
  - 3.24.23.4. Vote: motion passes 47 : 0 : 4
- 3.24.24. Move to approve the letter in document IEEE 802.11-06/1117r0, to forward to China's SAC, CESI, and MOFCOM
  - 3.24.24.1. Moved Jesse Walker
  - 3.24.24.2. Second Andrew Myles
  - 3.24.24.3. Question called with no objection
  - 3.24.24.4. Vote: motion passes 42 : 0 : 6

### **3.25. New Business**

- 3.25.1. No Items
- 3.25.2. Are there any new business items from the floor?
  - 3.25.2.1. None

### **3.26. Any other business**

- 3.26.1. Harry Worstell states that he has received 60 emails regarding attendance sign-in. The CAC has agreed that there will be no adjustment

for missing sign in. There is enough margin to account for missing some. Do not send more emails to Harry.

3.26.2. Stuart notes that if there are network issues, see the network support staff

3.26.3. Discussion

3.26.3.1. There are people who were not used to the attendance system. There should be leniency until the members are used to the system.

3.26.3.2. Jon Rosdahl states that he could not sign in during emails. He sent an email because the automated system was not working at that time. Requests that Harry work with the software to provide a method to view the current status of attendance. Jon believes allowing individuals to check their status would help in the number of requests.

3.26.3.3. Harry states that this is an interim solution. The 802 ExCom is working on a final solution.

3.26.3.4. Stuart states that we explained on Monday that members could sign in for tutorials as a WG session.

3.26.3.5. Charles Wright concurs that a means of reviewing attendance status would be very valuable.

3.26.3.6. Dave Bagby states that he also ran into the issue of being unable to sign in during a tutorial. Feels that it is inappropriate to state that it is an interim system while not allowing any margin or consideration for anomalies.

3.26.3.7. Do all active session hours count as attendance and what about Thursday? Stuart will take offline. He notes that the new P&P does not take effect until after this meeting adjourns.

3.26.3.8. Ken Clements states that there should be a means for redress when members miss signing in.

3.26.3.9. Harry states that Walter will open up a margin of 5-10 minutes on each side of each session.

3.26.3.10.

### 3.27. *Deferred motion from RR-TAG*

3.27.1. Motion: To approve the content of 18-06/0050r0 related to the 802.11 parameters in table 1 (key technical parameters) of Annex 6 in Annex 17 of the ITU-r Document 8A/376-E.

3.27.1.1. Moved Peter Murray

3.27.1.2. Second Jesse Walker

3.27.1.3. Question called with no objection

3.27.1.4. Vote: motion passes 29 : 0 : 10

### 3.28. *Closing*

3.28.1. Next Meeting: September 17-22, 2006, in Melbourne, Victoria, Australia. The agenda will be in document 06/993.

3.28.1.1. Andrew Myles states that members in an international standards body should make the effort to attend, despite the distance

3.28.2. Stuart J. Kerry notes that the November meeting will be the 100<sup>th</sup> meeting of 802.11. Member's suggestions for ideas for special events are welcomed, as are sponsor contributions to support a celebration.

3.28.2.1. Clint suggests a printed copy of the current draft of 802.11rev-MA.

### 3.29. *Adjourn*

3.29.1. The meeting is adjourned at 11:50

Jul-06

<b>ID</b>	<b>Last Name</b>	<b>First Name</b>
1570	Abdelilah	Youssef
426	Aboul-Magd	Osama
3890	Acosta-Marum	Guillermo
1486	Adachi	Tomoko
176	Adams	Jon
3921	ADLER	AMIR
3841	Ahn	Sanghyun
82	Aldana	Carlos
1205	Alexander	Thomas
682	Alimian	Areg
274	Andrus	David
3000	Anholt	Micha
166	Ariyavisitakul	Sirikiat Lek
51	Armstrong	Lee
3698	Ashley	Alex
1047	Astrin	Arthur
687	Audeh	Malik
1936	Awater	Geert
155	Backes	Floyd
584	Bagby	David
3685	Bagchi	Amit
3424	Bahr	John
425	Bahr	Michael
3811	Bai	Fan
77	Baker	Dennis
3258	Banerjee	Kaberi
2481	Bansal	Amit
729	Barber	Simon
1759	Bari	Farooq
46	Barnwell	Richard
2367	Basson	Gal
1261	Batra	Anuj
3348	Bavafa	Moussa
3889	Bayram	Metin
3887	Beacham	Gordon
3830	Beckmann	Friedrich
732	Benveniste	Mathilde
345	Bjerke	Bjorn
3271	Blanchard	Colin
2544	Borges	Daniel
3441	Buga	Walter
3801	Bumiller	George
1695	Buttar	Alistair
3721	Calderon	Peter
1394	Calhoun	Pat
876	Cam-Winget	Nancy
1368	Canpolat	Necati
3886	Carrion	Inma
350	Carson	Pat

1469	Cash	Broady
3446	Cavalcanti	Dave
3919	Chan	Douglas
1924	Chang	Yuan-shen
28	Chaplin	Clint
192	Chen	Jeng-Hong
3285	Chen	Lily
210	Chen	Michael
523	Cheng	Hong
3112	Cheng	Paul
2975	Chin	Kevin
2018	Choi	Sunghyun
948	Chu	Liwen
2009	Ciotti	Frank
672	Clements	Ken
2587	Cole	Terry
772	Conner	W. Steven
1180	Cook	Charles
1859	Cooklev	Todor
2782	Cypher	David
1814	de Courville	Marc
545	de Vegt	Rolf
788	Demel	Sabine
3282	Denteneer	Dee
3474	Dharanipragada	Kalyan
2291	Dickey	Susan
15	Doi	Yoshiharu
722	Dondeti	Lakshminath
847	Durand	Chris
226	Durand	Roger
1828	Dure	Sebastien
2968	Duryee	Guy
374	Eastlake	Donald
2521	Ecclesine	Peter
131	Ellis	Michael
171	Emmelmann	Marc
3829	Engelstad	Paal
349	Epstein	Joe
1790	Epstein	Leonid
3234	Erceg	Vinko
126	Estrada	Andrew
2038	Fechtcl	Stefan
467	Fedyk	Donald
3235	Fernald	Royce
3041	Fettweis	Gerhard
976	Fischer	Matthew
628	Fisher	Wayne
175	Foegelle	Michael
3951	Friedman	David
3836	Gaikwad	Rohit
3528	Gast	Matthew

3389	Gaur	Sudhanshu
578	Ghazi	Vafa
3892	Gibson	Michael
810	Godfrey	Tim
1170	Goettemoeller	Mike
1772	Gong	Michelle
836	Gossain	Hrishikesh
3703	Gosteau	Jeremy
1095	Grandhi	Sudheer
731	Gray	Gordon
2563	Green	Larry
3752	Greenstein	David
3740	Gresset	Nicolas
2091	Gunduzhan	Emre
3853	Gupta	Pratibha
571	Gurevich	David
1084	Haensgen	Gregg
3641	Haghighi	Siamack
512	Hall	Robert
1209	Harkins	Daniel
157	Hart	Brian
1785	Hassan	Amer
1565	Hattig	Myron
1416	Hauser	James
1944	Hayes	Kevin
185	Henderson	Gregory
57	Hermodsson	Frans
394	Hiertz	Guido
863	Hillman	Garth
252	Hinsz	Christopher
3218	Hosur	Srinath
3846	Hsieh	Robert
970	Hu	Wendong
938	Huang	Robert
3895	HUH	JIYOUNG
707	Hunter	David
3804	Hunzinger	Jason
2493	Huotari	Allen
239	Inoue	Yasuhiko
3302	Jellum	Robin
1124	Jeon	Ho-In
2879	Jeong	Yeonkwon
580	Jetcheva	Jorjeta
290	Ji	Lusheng
2600	Jiang	Daniel
1325	Johnson	Todd
715	Jokela	Jari
548	Jones	VK
892	Joshi	Avinash
2182	Kado	Youiti
1886	Kain	Carl

828	Kakani	Naveen
966	Kandala	Srinivas
843	Kangude	Shantanu
1237	Kasher	Assaf
189	Kato	Masato
1412	Kavner	Douglas
3720	Kelly	Scott
2605	Kennedy	Richard
1784	Kent	Jeremy
295	Kerry	Stuart
1036	Ketchum	John
577	Kiernan	Brian
879	Kim	Joonsuk
1893	Kim	Kyeongsoo
74	Kim	Kyungtae
299	Kleindl	Guenther
1815	Kneckt	Jarkko
86	Kobayashi	Mark
3686	Kodavati	Venkat
1123	Koga	Keiichiro
477	Koh	Benjamin
932	Kolze	Thomas
3624	Komiya	Ryoichi
8	Kraemer	Bruce
1201	Krishnan	Gopal
1642	Kruys	Jan
3380	Kuhtz	Christian
1127	Kumar	Rajneesh
1768	Kuratani	Yasutaka
1902	Kurihara	Tom
81	Kwak	Joseph
841	Landt	Jeremy
1887	Lauer	Joseph
2610	Leach	David
1232	Lee	Jin
3654	Lee	Scott
1356	Lee	Sung-Won
3911	Lee	Sungil
1847	Lee	Tae-Jin
91	Levy	Joseph
988	Li	Jia-Ru
711	Li	Sheung
3384	Lim	Azman-Osman
3713	Lin	Paul
3722	Liu	Nelson
779	Loc	Peter
723	Lou	Hui-Ling
3937	Lu	Xiaolin
3488	Lubar	Dan
2867	Lyons	Daniel
1813	Madhavan Pillai	Krishna

3739	Malarky	Alastair
544	Malek	Majid
673	Malinen	Jouni
279	Marshall	William
3748	Mase	Kenichi
3913	Matsuno	Craig
2303	Matta	Sudheer
54	McCann	Stephen
146	McFarland	William
795	McNamara	Darren
309	Medvedev	Irina
558	Mehta	Pratik
65	Merrill	Mark
3443	Mesecke	Sven
340	Meylan	Arnaud
3643	Miller	James
372	Miller	Robert
3928	Milne	David
3434	Miyoshi	Hidekazu
1298	Mlinarsky	Fanny
3255	Mo	Liangyao
832	Molisch	Andreas
809	Montemurro	Michael
1845	Montenegro	Gabriel
2197	Moorti	Rajendra
2172	Morioka	Hitoshi
1860	Morioka	Yuichi
3882	Mouler	Lior
3710	Murabito	Anthony
3744	Murakami	Yuichi
1389	Myles	Andrew
2483	Nabar	Rohit
2875	Nadeem	Tamer
3788	Nakajima	Masayoshi
107	Nakamura	Tetsuya
193	Nakao	Seigo
1794	Nakase	Hiroyuki
903	Nalamati	Ravi
688	Nallapureddy	Bhaskar
294	Nanda	Sanjiv
3952	Narayanan	Vidya
619	Nitsche	Gunnar
743	Noble	Erwin
58	Noens	Richard
2510	Nozaki	Masanori
1177	O'Hara	Bob
2322	O'Hara	Sean
327	Odagiri	Hideaki
3612	Oden	Price
11	Odman	Knut
136	Ojard	Eric

223	Olson	Chandra
1300	Olson	Timothy
1956	Oyama	Satoshi
14	Paine	Richard
3833	Palanivelu	Arul Murugan
2328	Palm	Stephen
2272	Parameswaran	Subra
3824	Park	Min-Ho
1021	Parsa	Kourosh
3854	Patel	Bhavin
1317	Peleg	Yaron
313	Pellon	Miguel
1172	Perahia	Eldad
322	Petranovich	Jim
515	Pirzada	Fahd
3677	Pirzada	Masood
3262	Poncini	Victoria
1203	Ponnuswamy	Subbu
3783	Posthuma	Carl
105	Poston	Jeff
63	Ptasinski	Henry
3867	Puvvala	Ravi
381	Qi	Emily
805	Qian	Lu
2927	Rabaeijs	Alain
2420	Rahman	Shah
3844	Rai	Vinuth
543	Raissinia	Ali
1804	Rayment	Stephen
3660	Raymond	Phil
164	Repice	Joseph
186	Reuss	Edward
2153	Rios	Carlos
1423	Rosca	Justinian
235	Rosdahl	Jon
953	Roy	Richard
1630	Rude	Michael
104	Rudolf	Marian
1312	Sakoda	Kazuyuki
280	Salhotra	Atul
2073	Sanwalka	Anil
468	Sargologos	Nicholas
234	Sastry	Ambatipudi
2184	Scarpa	Vincenzo
1865	Schultz	Donald
3777	Selignan	Anne-Laure
3761	Senarath	Gamini
158	Sennett	DeWayne
3531	Seo	Myunghwan
3631	Shan	Changhong
1342	Shao	Huai-Rong

2072	Sharma	Neeraj
2872	Sharma	Suman
267	Sharon	Ariel
1771	Shen	BZ (Ba-Zhong)
1530	Sherlock	Ian
3634	Shi	Kai
2400	Shirali	Kedar
3679	Shrestha	Deepesh
228	Simpson	Floyd
3888	Singh	Harkirat
1404	Skidmore	Roger
1518	Smith	Matt
3781	Song	Leilei
59	Sood	Kapil
1928	Sreemanthula	Srinivas
1268	Stafford	Robert
76	Stanley	Dorothy
1973	Steck	William
26	Stephens	Adrian
2866	Stephenson	David
1752	Stevens	Fabrice
1837	Stibor	Lothar
3304	Stranne	Andre
742	Strutt	Guenael
3671	Su	Jiun-Jang
3693	Sun	Sheng
3114	Sun	Winston
821	Surineni	Shravan
777	Takai	Mineo
2996	Tamaki	Tsuyoshi
784	Tan	Teik-Kheong
408	Tanaka	Hideki
3139	Taylor	Henry
3680	Therthala	Bindu
3575	Thomson	Allan
583	Thrasher	Jerry
27	Tokubo	Eric
358	Tolpin	Alexander
96	Trachewsky	Jason
1387	Trainin	Solomon
3736	Tsai	Shang-Ho
2074	Tsoulogiannis	Tom
1217	Tung	David
2124	Turner	Sandra
1176	Tyson	Shannon
2011	Tzamaloukas	Mike
2939	Ueda	Kenji
461	Van Erven	Niels
549	van Nee	Richard
550	van Zelst	Allert
1007	Varsanofiev	Dmitri

3602	Varshney	Prabodh
3013	Venkatesan	Ganesh
954	Victor	Dalton
3505	Vlajnic	Milan
943	Vlantis	George
822	Vogtli	Nanci
2324	Walker	Jesse
1548	Wallace	Brad
3305	Wang	Huihui
3696	Wang	Qi
3726	Wang	Victor
3630	Wang	Xudong
286	Ward	Lisa
265	Watanabe	Fujio
3789	Watanabe	Hideomi
3564	Waters	Deric
982	Wells	Bryan
1539	Wentink	Menzo
962	Weytjens	Filip
459	Whitesell	Stephen
407	Wong	Marcus
546	Wong	Timothy
3468	Worsham	James
112	Worstell	Harry
718	Wright	Charles
780	Xhafa	Ariton
2297	Yamada	Katsuhiko
116	Yamaura	Tomoya
3691	Yang	Kai
3127	Yang	Sook Hyun
97	Yao	Zhonghui
904	Yee	James
3345	Yokohira	Kanji
1003	Young	Christopher
3823	Yun	Ji-Hoon
315	Zaks	Artur
2228	Zhang	Bing
3355	Zhang	Hongyuan
1028	Zhang	Jinyun
3650	Zhang	Junping
3639	Zhang	Yulin
2250	Zhao	Fuyong
2929	Zhou	Wenhui
503	Zuniga	Juan Carlos
1392	Zweig	Johnny
1531	Zyren	Jim

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**IEEE P802.11  
Wireless LANs**

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**Minutes of TGk San Diego Meeting**

Date: 2006-07-18

**Author(s):**

Name	Company	Address	Phone	email
Paul Gray	AirWave Wireless	1700 S. El Camino San Mateo, CA	650-678-5633	paul@airwave.com

**Abstract**

This document contains TG 11k minutes from San Diego Meeting.

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**07/18/06 AM1 Session:**

Meeting called to order at 08:00

1. Chair provided the standard IEEE policies and procedures.
  - a. Patent Policy – Chair **read** and **reviewed** new Patent Policy
  - b. Inappropriate Topics – Chair **read and reviewed** the Policy
  - c. Documentation and Presentation rules
  - d. LB 78 Discussion – current draft is 3.3
  - e. Current LB 78 Comment spreadsheet is 1049r45

2. Presentation of Agenda – agenda passes unanimously

3. Technical Presentation – Brian Hart

**Motion**

**Move to accept the resolutions for TGk LB83 comments as written in doc 06/0921r0 (Hart) and instruct the TGk editor to apply the changes and instructions therein.**

**Moved: Hart**

**Seconded: Ecclesine**

**Discussion on Motion**

None

**For: 6**

**Against: 0**

**Abstain: 2**

**Motion passes**

*Note: Secretary merged spreadsheet into 11-06-0891-03*

4. Technical Presentation – Peter Ecclesine – Annex I & J

**Motion**

**Move to accept the comment resolutions for TGk LB83 comments as written in spreadsheet documents 06/0778r1 (Ecclesine) and instruct the editor to incorporate these resolutions into the next version of the TGk draft**

**Moved: Ecclesine**

**Seconded: Hart**

**Discussion on Motion**

None

**For: 7**

**Against: 0**

**Abstain: 1**

**Motion passes**

*Note: Secretary merged spreadsheet into 11-06-0891-03*

5. Technical Presentation – Joe Kwak – Adjacent Channels

**Motion**

**Move to accept the comment resolutions to decline comment 200 as presented in document 06/969r1.**



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**Move to incorporate the normative text as written in doc 06/0970r0 into the next version of the TGk draft.**

**Moved: Kwak**  
**Seconded: Matta**

**Discussion on Motion**

**For: 8**

**Against: 0**

**Abstain: 1**

**Motion passes**

*Note: Secretary merged spreadsheet into 11-06-0891-04*

9. Technical Presentation – MIB Comments – Gray - 11-06-0998-01 (Backup word document which is a reference for Simon 11-06-0509-04 – this contains a full MIB)

10. Technical Presentation — Ganesh - 11-06-1033-01 (PPT)

- a. Counter – 32, 163, 164, 165, 277, 506, 507, 510, 572, 636, 675
- b. Accepts – 31, 34, 188,276, 383, 437, 438, 447, 546, 569, 598, 622, 632, 633, 634, 636,
- c. Declines – 197, 275, 445, 502, 503, 504, 534, 571, 624, 676, 689, 665,
- d. Discussion
  - Change Neighbor AP to “Any validated AP that is a potential transition candidate.” Change Validated Neighbor AP to “3.16A validated AP: an AP that has either been explicitly configured as a Neighbor in the MIB, or learned through a mechanism like the Beacon Report and confirmed through trusted mechanisms such as a secure IAPP. Replace any occurrence of “Validated Neighbor AP” with “Neighbor AP”.
  - Comment - Two APs that can hear each other can both be heard by a single client.
  - Comment – Use the common English interpretation of “neighbor”.
  - Joe Kwak – Marty’s recommendation on Neighbor Report is valid
- e. Discussion on broadcast and wildcard – both comments should be declined
- f. Discussion – on measurement in microseconds

11. Comment #348 has invalid reference and will not be addressed by Matta

12. Review Schedule

- a. Tomorrow we have 4 votes
- b. Each section owner should ensure his/her comments are incorporated into the draft properly.

13. Technical Presentation — Matta 11-06-0985r5 – RCPI

- a. Define exponential moving average
- b. Discussion on how to make this definition as clear as possible.

14. Technical Presentation — Paine

- a. Comment #534 – Hidden Station. Ganesh has already declined this comment
- b. Comment #541 - Has already been resolved
- c. Comment #650 & 316
- d. Comment #676 – Ganesh will address

15. Draft discussion
  - a. We have to vote on a draft on noon on Thursday
16. Recess until 8:00 AM tomorrow morning

**07/19/06 AM1 Session:**

Meeting called to order at 08:00

1. Chair provided the standard IEEE policies and procedures.
  - a. Votes
  - b. Disassociate Imminent Vote – 9:30
  - c. Review Unresolved Issues

2. Presentation of Agenda – agenda passes unanimously

3. Technical Presentation – Paul Gray – MIB Comment Resolutions

**Motion**

**Move to accept the comment resolutions for TGk LB83 comments as written in spreadsheet document 06/0988r1 (Gray) and instruct the editor to incorporate these resolutions into the next version of the TGk draft**

**Moved: Gray**

**Seconded: Kwak**

**Discussion on Motion**

None

**For: 5**

**Against: 0**

**Abstain: 5**

**Motion passes**

*Note: Editor you can use 11-0509-03 – it is a full MIB with compliance statements and other.*

*Note: Secretary merged spreadsheet into 11-06-0891-05*

4. Technical Presentation – Paine – General Comment Resolutions – 11-0980-03 (xls)

**Motion**

**Move to accept the comment resolutions for TGk LB83 comments as written in spreadsheet document 06/0980r3 (Paine) and instruct the editor to incorporate these resolutions into the next version of the TGk draft**

**Moved: Kwak**

**Seconded: Matta**

**Discussion on Motion**

None

**For: 7**

**Against: 0**

**Abstain: 5**

**Motion passes**

*Note: Secretary merged spreadsheet into 11-06-0891-06*

5. Technical Presentation – Matta – RCPI – 11-0986-00 (xls) spreadsheet

**Motion**



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 10. Technical Presentation – Ganesh – RCPI – 11-0959-01 – Review unaddressed comments with Group Votes

## a. Comment #203

Resolution – Decline - The measuring STA does not know if there is more data to report when reporting interim measurement results. TGk draft requires timely reporting of measurement results without “undue delay”. For very long measurement durations interim measurement reports will be generated and transmitted. Since the amount of measurement report data depends on medium events which are sensed and measured after interim measurement reports are transmitted, the measuring station cannot know if there will be additional measurement data.

Declination passes unanimously

## b. Comment #170

Resolution – Counter – P 73, L 37, change “shall be specified” to “is specified”. P 73, L37-38, change “shall mean” to “indicates”. Though testability is a desirable characteristic for any specified requirement certain actual performance requirements may not be readily testable.

Counter passes unanimously

## c. Comment #171

Resolution – Accept – P 74, L 11 & L 16: change “shall be” to “will be. P 73, L37-38, change “shall mean” to “indicates”. Though testability is a desirable characteristic for any specified requirement certain actual performance requirements may not be readily testable.

Counter passes unanimously

*Note: Secretary merged spreadsheet into 11-06-0891-07*

## 11. Technical Presentation – Paine – Disassociate Imminent –

- a. 04/338r0 contains the Minutes from the TGk Mar 04 meeting
- b. TGk Chair after meeting with CAC decided to allow another opportunity to present a draft to reinsert Disassociate Imminent
- c. TGk Chair reformatted Marty’s document (06/925r0) for vote in San Diego.
- d. Dan Harkins – comments that the removal was out-of-order as agreed to by Stuart and Richard per Marty. TGk Chair stated that was not the case.
- e. Roger Durand – thought there were multiple votes and that was Marty’s complaint. TGk chair does not agree and states that it has failed approval on 4 occasions.
- f. Matta – would like Stuart’s interpretation of the meeting with Marty, Richard, and both Vice Chairs. Stuart - recounted the meeting and stated that it is the Task Group’s responsibility to determine if Disassociate Imminent should be in the draft. He will be glad to discuss the formal process off-line.
- g. Roger Durand – question on who created the document? Chair answered that Marty created the document. Roger was confused on why this document is being presented to put back in when it should have been in the draft in the force.
- h. Stuart wants it minuted that this document has not been changed other than footers, headers, and misspellings.

- 
- i. Andrew Myles – The appeal process was not followed, so there is no debate on process. The debate should be on the technical merits of Disassociate Imminent and its inclusion in the draft.
  - j. Roger Durand – Disagrees with previous commenter and believes this is a debatable item and should be brought in front of the executive committee.
  - k. Matt – This document is based on 3.7 draft is it valid.
  - l. Stuart – would like it minuted that 3.7 and 4.0 are identical
  - m. Editor – 3.7 and 4.0 are identical other than removal of the red-lines and the version numbers per 11k Editorial

**Motion**

**Move to incorporate the normative text as written in doc 06/925r0 into the next version of the TGk draft.**

**Moved: Matta**

**Seconded: Walker**

**Discussion on Motion**

Olson – not knowing the rules is not a reason to break the rules.

Durand – Andrew has no authority to make his statements.

Andrew – Request the chair make a statement on whether Disassociate Imminent is in the draft or not? Chair states that Disassociate Imminent is not in the draft.

Dave Bageby – This is a technical decision and not a procedural decision.

Time Olson – Speaks against the motion, because (1) it is in TGv, (2) poorly written, and does not belong in TGk. It is a client control issue better suited to TGv.

Qi – speaks against this motion, because it has nothing to do with RRM. It is now part of the TGv.

Kwak – speaks against this motion.

Roger Durand – speaks against the motion and believes it belongs in TGv

Matta – speaks in favor of the motion

Dave Bageby – calls the question

Stuart – Chair f 802.11 will not vote on this motion

**For: 7**

**Against: 19**

**Abstain: 4**

**Motion fails @ 27%**

17. Recess until PM1 today

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**07/19/06 PM1 Session:**

Meeting called to order at 13:30

1. Reviewed agenda
2. Presentation of Agenda – agenda passes unanimously
3. Technical Presentation – Ganesh –Comment Resolutions

**Motion for spreadsheet**

**Move to accept the comment resolutions for TGk LB83 comments as written in document spreadsheet 06/0959r1 (Ganesh), excluding comment 716, and instruct the TGk secretary to incorporate all of the resolutions into the resolution rollup spreadsheet.**

**Moved: Ganesh**

**Seconded: Gray**

**Discussion on Motion**

None

**For: 8**

**Against: 0**

**Abstain: 3**

**Motion passes**

*Note: Secretary merged spreadsheet into 11-06-0891-08*

**Motion**

**Move to accept the comment resolutions for TGk LB83 comments as written in document 06/0960r1 (Ganesh) and instruct the TGk editor to apply the changes and instructions therein.**

**Moved: Ganesh**

**Seconded: Kwak**

**Discussion on Motion**

None

**For: 7**

**Against: 0**

**Abstain: 5**

**Motion passes**

*Note: Secretary merged spreadsheet into 11-06-0891-08*

4. In meeting comment resolution working on 11-06-0891-09
  - a. Comment #37 - Accept
  - b. Comment #45 – Decline - The last row indicates a change in the order column. The order is updated to indicate the inserted rows.
  - c. Comment #49 – Accept - P9 L0 Table 15A last order item, change "12" to "Last"
  - d. Comment #50 – Counter - P9L4 and L5 change "27" to "39"
  - e. Comment #53 – Accept - Please reformat the table 26 per 802.11ma D7.0 to add the third column (length) and add cross references to the first column.
  - f. Comment #421 – Accept - Commenter is correct. Neighbor Report differs from other radio measurement exchanges in that a Neighbor Report may only be requested from an AP and provided by an AP. No text change is needed.

- g. Comment #439 – Accept - Changed reference from clause 7.3.2.36 (PG). P41L3 Change "Length field is" to "Length field in octets is". Editor to make the same change to all length fields in Clause 7.
  - h. Comment #186 – Deferred
  - i. Comment #675 – Decline - The suggested definition for AP Reachability actually indicates that a STA has authenticated to the AP. The intent of AP Reachability is to indicate the capability to authenticate with the AP.  
This comment was already resolved, but we went ahead and address with a better resolution.
  - j. Comment #348 – Decline – Cannot resolve reference
  - k. Comment #363 – Resolved in 06-0772-02
  - l. Comment #384 – Decline - Commenter is invited to provide normative text in next recirc.
  - m. Comment #385 – Decline - Commenter is invited to provide normative text in next recirc.
  - n. Comment #386 – Decline - Commenter is invited to provide normative text in next recirc.
5. 15:00 Recess until PM2 today

---

**07/19/06 PM2 Session:**

Meeting called to order at 16:00

1. Reviewed agenda
2. Presentation of Agenda – agenda passes unanimously
3. In meeting comment resolution working on 11-06-0891-09
  - a. Comment #664 – Palm will need to resubmit as decline in next letter ballot. We have been waiting for 6 months for a resolution.
4. Dave Bageby was looking for people to help write up how TGn impacts TGk.
5. In meeting comment resolution working on 11-06-0891-09
  - a. Comment #412 – accept – same as 113
  - b. Comment #474 – accept – same as 413
  - c. Comment #631 – decline – It is defined on P2L30 and it has been improved on.
  - d. Comment #696 – deferred - The definition was drafted by Aboba and Walker is related to preauthentication.
  - e. Comment #716 –

Motion

**Motion to reaffirm QoS Metrics**

Move to decline the LB83 comment 716 to remove QoS Metrics

Moved: Kwak

Seconded: Palm

Discussion on Motion

None

For: 6

Against: 4

Abstain: 3

Motion fails

Palm wants to note that this measurement is excessive.

06/1003r0 and 04/1202r2 are references for keeping the QoS Metric in. There was a vote in the San Diego meeting on declining the comment and the vote was 6/3/2. The motion to decline did not pass with 75%. The reason for not declining the comment was it is excessive.

*Note: Secretary merged spreadsheet into 11-06-0891-08*

6. Decline comment 631 and change to “The AP to which the STA is associated.”
7. Change the comment resolution for comment #277 to what was previously defined for comment #631 “The AP to which the STA is associated.”
8. Change comment 631 and 277 to new definition – “The serving AP is any AP with which at least one STA
9. Editor update – Integrating Jacksonville normative text

10. Comment #186 – decline - The definition was drafted by Aboba and Walker and IS related to pre-authentication. Per discussion on 07/19/06 at with Bernard Aboba the definition should remain the same. Need a joint meeting with 11r since AP reachability is the same in both tasks decline.
11. Comment #696 – decline - The definition was drafted by Aboba and Walker and IS related to pre-authentication. Per discussion on 07/19/06 at with Bernard Aboba the definition should remain the same. Need a joint meeting with 11r since AP reachability is the same in both tasks decline.
12. Comment #716 – deferred after much discussion
13. Discussion on procedures\
14. Meeting in recess until AM1 tomorrow.

**07/20/06 AM1 Session:**

Meeting called to order at 8:00 (Gray and Paine in attendance)

Note – TGv is meeting this morning.

1. Meeting in recess at 8:30 until Simon completes a draft.
2. Meeting is back from recess at 9:30 (Gray, Paine, Hart, and Ganesh).
3. The group is reviewing the draft begin at 9:31.
4. Review upcoming motions.
5. Meeting in recess at 10:00 until AM2

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**07/20/06 AM2 Session:**

Meeting called to order at 10:31

1. Meeting in recess at 8:30 until Simon completes a draft.
2. Vote to amend Jacksonville minutes so Editor can continue editing the draft

**Motion**

Move to approve the amended Jacksonville minutes (06/692r5) error where the number of the document in a vote was duplicated and not revised (P10L16) modified "06/772r2" to "06/702r0".

Moved: Gray  
Second: Ganesh

Motion passes with unanimous approval

3. Vote on Teleconference Minutes

**Motion**

Move to accept the May-Jul teleconferences minutes 06/821r4.

Moved: Gray  
Second: Kwak

Motion passes with unanimous approval

4. Vote on Ad-hoc minutes

**Motion**

Move to accept the Monday 07/17/06 Ad Hoc minutes found in 06/981r0.

Moved: Gray  
Second: Ganesh

Motion passes with unanimous approval

5. Approval the master comment resolution spreadsheet

**Motion**

Move to accept the accepted, countered, and declined comments of the spreadsheet 06/891r9.

Moved: Gray  
Second: Kwak

For: 6                                      Against: 0                                      Abstain: 0

6. Vote on Joe Kwak as Editor Pro Temp

**Motion**

Move to accept Joe Kwak as TGk editor with a transition period between San Diego and Melbourne from Simon Barber

Moved: Olson  
Second: Ganesh

For: 10                      Against: 0                      Abstain: 0

7. Vote to create an interim draft

**Motion**

Move to post Draft 4.1 as an interim draft on the 802.11 Working Group Website

Moved: Kwak  
Second: Ganesh

For: 9                      Against: 0                      Abstain: 0

8. Motion to Approve a Draft

Comment – We don't need a full blown motion. Joe Kwak's answer – we must have this for the assurance that we have reviewed it.

**Motion**

Move to request the Working Group to approve the issuance of a 10 day Procedural Letter Ballot, starting not later than 2006-08-09, asking the question; "Do you believe the TG "k" Draft is technically complete and ready for WG approval, e.g. no place holders or notes for future action, editing, or clarifications and vote to forward the draft of IEEE 802.11k to Working Group Recirculation Letter Ballot as Draft 5.0.

Moved: Hart  
Second: Kwak

For: 10                      Against: 0                      Abstain: 0

Motion passes

9. Motion for Recirc. Following Proc LB

**Motion**

Believing that comment responses in 11-06-0891-09 and the draft mentioned below satisfy WG 802.11 rules for letter ballot recirculation,

Authorize a 15-day LB recirculation of 802.11k draft 5.0 assuming approval of current draft per 10 day procedural LB. Letter Ballot recirculation to conclude no later than 2006-09-11.

Moved: Kwak  
Second: Ganesh

For: 8                      Against: 2                      Abstain: 0

Motion passes

10. Motion for Recirc.

**Motion**

---

Believing that comment responses in 11-06-0891-09 and the draft mentioned below satisfy WG 802.11 rules for letter ballot recirculation,

Authorize a 15-day LB recirculation of 802.11k draft 5.0 to conclude no later than 2006-09-11.

Moved: Ganesh

Second: Hart

For: 7

Against: 0

Abstain: 0

Motion passes

11. Vote to empowerment for teleconferences

**Motion**

Move to request the Working Group to empower the TGk to hold weekly teleconferences (Thursdays at noon Eastern time) through 2 weeks after the Dallas meeting as required to conduct business necessary to progress the Letter Ballot process, including creating and issuing drafts for Letter Ballots and handling other business necessary to progress through the IEEE standards process.

Moved: Hart

Second: Ganesh

For: 8

Against: 0

Abstain: 0

12. Vote to teleconference minutes for 07/13/06.

**Motion**

Move to accept the 2006-7-13 teleconference minutes found in 06/1105r0.

Moved: Gray

Second: Ganesh

For: 8

Against: 0

Abstain: 1

13. Review objectives for next meeting

14. Review objectives between San Diego and Melbourne

15. Motion to adjourn Hart/Ganesh – passes unanimously.

16. Meeting is adjourned until Melbourne

# Report and Minutes of TGm

## July 2006

**DATE: 2006-07-19**

### Author(s)

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# Abstract

**Report and minutes of the meeting of TGm at the July 2006 session.**

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# Goals for July 2006

- **Prepare response to one interpretation request received**
- **Process comments received on the second sponsor recirculation ballot**
- **Adopt resolutions to all comments processed**
- **Begin third recirculation ballot**

# Submissions

- **Submissions**
  - 06/926r1

# Proposed Agenda

- **Consent agenda:**
  - Approve minutes and report from May 2006 meeting (document 06/664r0)
- **Review IEEE Patent Policy**
- **Review interpretation request procedure**
- **Old business**
  
- **New business**
  - Process comments received from second sponsor recirculation ballot
  - Adopt comment resolutions
  - Direct editor to complete draft 8.0
  - Direct WG chair to initiate third sponsor recirculation ballot
  - Prepare response to interpretation request
- **Adjourn**

# Motion #1 to adopt Agenda

- **Moved:** to adopt the agenda
- **Mover:** Peter Ecclesine/Guido Hiertz
- **Passes:** unanimous

# IEEE-SA Standards Board Bylaws on Patents in Standards

- <http://standards.ieee.org/board/pat/pat-slideset.ppt>

## Question to the members

- **Chair:** Are there any patents or patent applications of which the members are aware, for which the Working group chair needs to be notified?
- **Response:** No such patent applications or patents were identified.

# Interpretation Procedure

- <http://standards.ieee.org/reading/ieee/interp/>
- **Send email to Rona Gertz (r.gertz@ieee.org)**
- **IEEE forwards requests to the WG**
- **WG responds**

## Motion #2

- **Moved: To accept the suggested remedy of comment #54 as the resolution to that comment, and to resolve comment 19 with the following text:**
  - See the resolution to comment #54. There is no need to make a special case for DLS. It is already encompassed by the current countermeasures text.
- **Moved: Suman Sharma/Dorothy Stanley**
- **5/0/1: passes**

## Motion #3

- **Moved: To accept the suggested remedy of comment #58 as the resolution to that comment with the addition of the following text:**
  - Adopt the suggested remedy as written. In addition, at the first occurrence of STSL teardown, add the following text. "An example of STSL application teardown procedure is described in 11.7.3."
- **Moved: Suman Sharma/Dorothy Stanley**
- **Passes: unanimous**

## Motion #4

- **Moved:** to accept the suggested remedy to comment #53 as the resolution to that comment.
- **Moved:** Suman Sharma/Dorothy Stanley
- **Passes:** unanimous

## Motion #5

- **Moved: to accept the suggested remedy to comment #24 as the resolution to that comment.**
- **Moved: Suman Sharma/Guido Hiertz**
- **Passes: unanimous**

## Motion #6

- **Moved: to adopt the suggested remedy of comment #69 as the resolution to that comment.**
- **Moved: Dorothy Stanley/Suman Sharma**
- **Passes: unanimous**

# Motion #7

- **Moved: to adopt the suggested remedy to comment #76 as the resolution to that comment.**
- **Moved: Dorothy Stanley/Suman Sharma**
- **3/0/3 Passes**

# Motion #8

- **Moved: to adopt the following as the resolution to comment # 77:**
- **Replace the existing text with the following:**
  - — SMKNEGOTIATING3: This state is entered when the fifth EAPOL-Key frame for the SMK Handshake is received by the Initiator STA.
  - — SMKNEGOTIATING4: This state is entered when the fourth EAPOL-Key frame for the SMK Handshake is received by the Peer STA.
  - — STKSTART: Once the SMKSA is created, the Initiator STA enters this state. This is the start of the STK 4-Way Handshake.
  - — STKCALCNEGOTIATING: This state is entered when the second EAPOL-Key frame for the STK 4-Way Handshake is received by the Initiator STA and the MIC is verified.
  - — STKCALCNEGOTIATING1: This state is entered when the first EAPOL-Key frame for the STK 4-Way Handshake is received by the Peer STA and the MIC is verified.
  - — STKCALCNEGOTIATING2: This state is entered unconditionally by the Initiator STA.
  - — STKCALCNEGOTIATING3: This state is entered unconditionally by the Peer STA.
  - — STKCALCNEGOTIATING4: This state is entered when the third EAPOL-Key frame for the STK 4-Way Handshake is received by the Peer and the MIC is verified.
  - — STKINITDONE: This state is entered by the Initiator STA when the fourth EAPOL-Key frame for the STK 4-Way Handshake is received. This state is entered by the Peer STA when the fourth EAPOL-Key frame for the STK 4-Way Handshake is sent.
  
  - Also replace "STAKCALCNEGOTIATING2" with "STKCALCNEGOTIATING2" in figure 156.
- **Moved: Suman Sharma/Dorothy Stanley**
- **Passes: unanimous**

## Motion #9

- **Moved: to resolve comment #83 by accepting it in principle, with the following text:**
  - Replace "On expiration of this timer, the STAs shall delete its PeerKey handshake states and discard any message arrived for that session (after expiry)." with "On expiration of this timer, the STA shall transition to the STKINIT state."
- **Moved: Suman Sharma/Dorothy Stanley**
- **Passes: unanimous**

# Motion #10

- **Moved: to adopt the following text as the resolution to comment #47:**
  - Replace the first paragraph of 8.1.4 with the following text:
  - The PeerKey protocol provides mutual authentication, session identification, and data confidentiality for a STA to STA connection. A PeerKey association, comprised of a STA to STA link master key security association (SMKSA) and a STA to STA link transient key security association (STKSA), shall only be allowed within the context of an existing RSNA by both peers with a common AP. Both the initiator STA and the peer STA shall ensure that dot11RSNAEnabled is true before initiating the STA to STA link master key (SMK) and STA to STA transient key (STK) handshakes and establishing their respective security associations.
- **And to resolve comment #48 with the following text:**
  - See the resolution to comment #47.
- **Moved: Suman Sharma/Dorothy Stanley**
- **3/0/4 passes**

# Motion #11

- **Moved: to resolve comment #49 with the following text:**
  - See the resolution to comment #54.
- **Moved: Guido Hiertz/Dorothy Stanley**
- **Passes: unanimous**

# Motion #12

- **Moved: to reject comment #50 with the following text as the resolution:**
  - Delete "SMKSAs are cached for up to their lifetimes." from 8.4.1.1.4. This is an implementation decision and is not necessary to be specified. The protocol is robust enough to deal with the case where one side of the exchange has deleted the SMKSA.
- **Moved: Dorothy Stanley/Ariel Sharon**
- **4/0/3 passes**

# Motion #13

- **Moved: to resolve comment #4 by accepting the suggested remedy.**
- **Moved: Andrew Myles/Dorothy Stanley**
- **5/0/2 Passes**

# Motion #14

- **Moved: To resolve comment # 3 by accepting the suggested remedy.**
- **Moved: Andrew Myles/Terry Cole**
- **1/4/2 Fails**

## Motion #15

- **Moved: to resolve comment #3 by rejecting it with the following text:**
  - The consensus of the working group is that the material is useful as it provides a description of high level primary AP functions, in a use case format.
- **Moved: Dorothy Stanley/Guido Hiertz**
- **5/2/1 Fails**

# Motion #16

- **Moved: to accept as the resolution to comment #1 the suggested remedy provided by the commenter**
- **Moved: Andrew Myles/ Stephen Palm**
- **2/4/1 Fails**

# Motion #17

- **Moved: to reject comment #1 with the following text:**
  - It is inappropriate for a statement of future intention, as that suggested by the commenter, to be included in the standard.
- **Moved: Dorothy Stanley/Amjad Soomro**
- **6/2/1 Passes**

# Motion #18

- **Moved: to resolve comment #2 by accepting it in principle, with the following text:**
  - It is recognized that there is functionality in 802.11 that could be considered obsolete. The comment will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.
- **Moved: Andrew Myles/Amjad Soomro**
- **5/0/2 Passes**

# Motion #19

- **Moved: to resolve comment #5 by accepting it in principle, with the following text:**
  - It is recognized that there is functionality in 802.11 that could be considered obsolete. The comment will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.
- **Moved: Andrew Myles/Terry Cole**
- **4/2/0 Fails**

# Motion #20

- **Moved: to resolve comment #5 by rejecting it, with the following text:**
  - It is recognized that there is functionality in 802.11 that could be considered obsolete. The comment will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.
- **Moved: Dorothy Stanley/Amjad Soomro**
- **5/0/1 Passes**

# Motion #21

- **Moved: to resolve comment # 39 by accepting it in principle, with the following text:**
  - The previous change is to be reversed.
- **Moved: Stephen Palm/Jon Rosdahl**
- **Passes: unanimous**

## Motion #22

- **Moved: to accept comment #40 with the following text:**
  - Editor to replace current definition with the following: A key management protocol between two parties that confirms mutual possession of a station to station link master key (SMK) and distributes a station to station link transient key (STK).
- **Moved: Dorothy Stanley/Stephen Palm**
- **Passes: unanimous**

## Motion #23

- **Moved: to accept the suggested remedy of comment #41 as its resolution.**
- **Moved: Stephen Palm/Dorothy Stanley**
- **Passes: unanimous**

# Motion #24

- **Moved: to accept comment #42 with the following text:**
  - Editor to replace the definition with the following: A key management protocol between two parties that creates a new station to station link master key (SMK).
- **Moved: Suman Sharma/Stephen Palm**
- **6/0/1 Passes**

## Motion #25

- **Moved: to accept comment #43 with the following text:**
  - Editor to delete the last sentence
- **Moved: Terry Cole/Stephen Palm**
- **Passes: unanimous**

## Motion #26

- **Moved: to accept comment #45 with the following text:**
  - Replace "data rate, in units of 500Kbps and, if necessary, rounded up" with "data rate, rounded up to the next 500kb/s"
- **Moved: Stephen Palm/Guido Hiertz**
- **Passes: unanimous**

## Motion #27

- **Moved: to accept comment #44 in principle, with the following text:**
  - See the resolution to comment #43.
- **Moved: Guido Hiertz/Dorothy Stanley**
- **Passes: unanimous**

# Motion #28

- **Moved: to accept comment #46 with the following text:**
  - Editor to delete the following from the sentence: "and the Information Elements that are defined in the standard"
- **Moved: Terry Cole/Stephen Palm**
- **Passes: unanimous**

## Motion #29

- **Moved: to accept comment #51 with the following text:**
  - Replace "Here the following assumptions apply:" with "The following apply and are depicted in Figure 140."
- **Moved: Terry Cole/Suman Sharma**
- **Passes: unanimous**

# Motion #30

- **Moved: to reject comment #18 with the following text:**
  - The current rule already requires that the transmission of the BAR be sent at a rate that can be received by the destination station. There is no need to clarify that rule. The remainder of the suggested remedy is beyond the scope of the current recirculation ballot. The comment will be forwarded to the working group for consideration in a future revision of the standard.
- **Moved: Dorothy Stanley/Terry Cole**
- **Passes: unanimous**

# Motion #31

- **Moved: to accept comment #52 with the following text:**
  - Add the following definition: "Individual address: See unicast address."
  - Add individual address as a synonym in the unicast address definition.
- **Moved: Stephen Palm/Dorothy Stanley**
- **Passes: unanimous**

## Motion #32

- **Moved: to accept comment #22 with the following text:**
  - The editor is to remove the figures and text from page 323, line 28 through the end of the subclause.
- **Moved: Dorothy Stanley/Stephen Palm**
- **Passes: unanimous**

# Motion #33

- **Moved: to reject comment #29 with the following text:**
  - The comment is outside the scope of the current recirculation ballot, as no change was made to the power save functionality with DLS. The comment will be forwarded to the working group for consideration in a future revision of the standard.
- **Moved: Stephen Palm/Dorothy Stanley**
- **Passes: unanimous**

# Motion #34

- **Moved: to reject comment #27 with the following text:**
  - The comment is outside the scope of the current recirculation ballot. There were no changes that affect the cited text. The comment will be forwarded to the working group for consideration in a future revision of the standard.
- **Moved: Dorothy Stanley/Stephen Palm**
- **3/1/0 Passes**

# Motion #35

- **Moved: to reject comment #28 with the following text:**
  - The comment is outside the scope of the current recirculation ballot. The cited text has not changed. The comment will be forwarded to the working group for consideration in a future revision of the standard.
- **Moved: Guido Hiertz/Lothar Stibor**
- **Passes: unanimous**

# Motion #36

- **Moved: to accept comment #38 with the suggested remedy as the resolution.**
- **Moved: Guido Hiertz/Lothar Stibor**
- **Passes: unanimous**

# Motion #37

- **Moved: to reject comment #3 with the following text:**
  - The consensus of the working group is that the material in Annex N is useful. Inclusion of Annex N was approved unanimously in March 2005 (document 05/205r0, motion #7). This text was developed in response to requests from 802.11 members and external SDOs for additional description of AP functionality. Annex N describes the functions of an AP using a UML-based syntax to clarify AP function versus common implementations of AP devices. The burden of proving that Annex N is not useful is on the commenter.
- **Moved: Dorothy Stanley/Guido Hiertz**
- **5/1/0 Passes**

# Motion #38

- **Moved: to accept comment #37**
- **Moved: Stephen Palm/Bill Marshall**
- **Passes: unanimous**

# Motion #39

- **Moved: to reject comment #13 with the following text:**
  - The comment is outside the scope of the current recirculation ballot. The cited text has not changed. The comment will be forwarded to the working group for consideration in a future revision of the standard.
- **Moved: Dorothy Stanley/Stephen Palm**
- **3/0/2 Passes**

# Motion #40

- **Moved: to accept comment #36.**
- **Moved: Bill Marshall/Guido Hiertz**
- **Passes: unanimous**

# Motion #41

- **Moved: to accept comment #8**
- **Moved: Dorothy Stanley/Bill Marshall**
- **2/0/2 Passes**

## Motion #42

- **Moved: to accept comment # 26 in principle, with the following text:**
  - Replace the last two sentences of the paragraph with "The only applicable values of the ReasonCode are PeerKey\_MISMATCH and QSTA\_LEAVING. The encoding to Reason Code field values are defined in Table 84."
- **Moved: Dorothy Stanley/Bill Marshall**
- **Passes: unanimous**

## Motion #43

- **Moved: to assign the resolution of all unresolved editorial comments to the editor.**
- **Moved: Guido Hiertz/Dorothy Stanley**
- **Passes: unanimous**

# Motion #44

- **Moved: to reject comments #31 and 32 with the following text:**
  - The commenter has raised a significant issue. One duty of the sponsor of the standard, the working group chair in this case, is that all applicable letters of assurance be obtained prior to submission of the draft standard to REVCOM. The working group chair has been reminded of this requirement for 802.11REV-ma.
- **Moved: Guido Hiertz/Dorothy Stanley**
- **Passes: unanimous**

## Motion #45

- **Moved: to adopt the following text as the resolution to accept comment #23:**
  - Include the insertions and deletions shown in document 06/1051r0
- **Moved: Mike Montemurro/Dorothy Stanley**
- **5/0/3 Passes**

# Motion #46

- **Moved: to accept comment #30 with the following text:**
  - Include the content of document 06/926r1
- **Moved: Emily Qi/Peter Ecclesine**
- **6/0/2 Passes**

## Motion #47

- **Moved: To direct the editor to create 802.11REV-ma draft 8.0, incorporating the comment resolutions in document 06/918r1.**
- **Moved: Mike Montemurro/Dorothy Stanley**
- **9/0/0 Passes**

# Motion #48

- **Moved: to request the chair of TGm to seek the approval of all completed comment resolutions in document 06/918r1 by the 802.11 Working Group.**
- **Moved: Mike Montemurro/Guido Hiertz**
- **8/0/0 Passes**

## Motion #49

- **Moved: to request the chair of 802.11 to begin a third sponsor recirculation ballot, using 802.11REV-ma draft 8.0, once the draft becomes available. The recirculation ballot is to run for no less than 15 days and to conclude before the start of the 802.11 session in September 2006.**
- **Moved: Dorothy Stanley/Amjad Soomro**
- **9/0/0 Passes**

# Work Completed

<b>Comments at start of session</b>	<b>0</b>
<b>Comments received during session</b>	<b>90</b>
<b>Total Comments received</b>	<b>90</b>
<b>Comment resolutions written</b>	<b>43</b>
<b>Resolution writing completion</b>	<b>48%</b>
<b>Previously adopted resolutions</b>	<b>0</b>
<b>Comment resolutions adopted during session</b>	<b>43</b>
<b>Editorial comments assigned to editor</b>	<b>47</b>
<b>Comment resolutions undone</b>	<b>0</b>
<b>Resolution adoption completion</b>	<b>100%</b>
<b>Comments remaining to be resolved</b>	<b>0</b>

# Interpretation Request

- **Standard: IEEE Std. 802.11 - 1999 (Reaff 2003) Relevant Clauses: 9.2.5.6 / 9.2.5.5 / 9.7**
- **Issue: RTS/CTS usage with Fragmentation**
- **Classification: Ambiguous**
  
- **Clause 9.2.5.6 states that: RTS-CTS mechanism precedes the first fragment only in case of transmission of multiple fragments by a source STA, where (RTS threshold < Fragmentation Threshold). It also says "no further RTS/CTS frames need to be generated after the RTS/CTS that began the frame exchange sequence even though subsequent fragments may be larger than dot11RTSThreshols". The section also discusses the worst-case scenario, where an acknowledgment of a fragment is lost and is never heard by the source station.**
  
- **How does the frame transmission begin when there is an acknowledgment loss? Will there be an RTS-CTS exchange by the source STA again before retrying the lost fragment?**
  
- **Clause 9.2.5.6 says that the RTS-CTS mechanism should only occur before the transmission of the first fragment; the Frame Exchange Sequence in clause 9.7 also depicts this behavior, i.e. {RTS-CTS-}[Frag - ACK -]Last - ACK**
  
- **However, clause 9.2.5.5 states: "When a source STA transmits a fragment, it shall release the channel, then immediately monitor the channel for an acknowledgment.**
  
- **If no acknowledgment is received, then should the source STA perform a random backoff and contend for the channel? Would the source STA be required to send a RTS at this point to reserve the NAV again after gaining access on the channel?**
  
- **The standard is not clear from these clauses what the desired behavior should be.**

# Interpretation Response

- **The standard is unambiguous on this issue. Clauses 9.2.5.2, 9.2.5.3, 9.2.5.7, and 9.2.8 describe the use of the backoff procedure in various situations, including that when an ACK is not received in response to an individually addressed data frame (fragment). The description of fragmentation in the standard does not modify this behavior. Therefore, the standard requires a backoff procedure to be performed after loss of an ACK frame.**
- **Clause 9.2.6 describes the requirement to use RTS before the transmission of any MPDU longer than dot11RTSThreshold. Clause 9.2.5.6 modifies this general requirement when transmitting a fragment burst. RTS/CTS is required to precede the initial fragment in a fragment burst and is required not to be transmitted before any other fragments in that same fragment burst. Clause 9.7 also shows RTS/CTS preceding the initial fragment of a fragment burst.**
- **The standard is unambiguous on the topic of RTS/CTS usage with fragmentation.**

# Motion #50

- **Moved: to accept document 06/963r0 as the response to the interpretation request on RTC/CTS behavior.**
- **Moved: David Leach/Dorothy Stanley**
- **5/0/5 Passes**

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# Output Documents

- **06/0919r0: This report**
- **06/0918r0: Sponsor Recirculation 2 comments and Resolutions (pre-meeting)**
- **06/0918r1: Sponsor Recirculation 2 comments and Resolutions (with adopted resolutions)**
- **06/0963r0: Interpretation Response**

# Goals for September

- **Process comments received from third sponsor recirculation ballot**
- **Initiate fourth sponsor recirculation, if needed, or submit report to 802 EC for forwarding to RevCom**
- **Process any interpretation requests received**

# Adjourn

- **Meeting adjourned at 9:40am on July 19, 2006**

# Attendees

- **Lothar Stibor**
- **Suman Sharma**
- **Kevin Hayes**
- **Andrew Myles**
- **Simon Barber**
- **Peter Ecclesine**
- **Terry Cole**
- **Guido Hiertz**
- **Stephen Palm**
- **Donald Eastlake**
- **Lothar Stibor**
- **Emily Qi**
- **Dorothy Stanley**
- **Clint Chaplin**
- **Anthony Murabito**
- **Anil Sanwalka**
- **Jouni Malinen**
- **David Leach**
- **Michael Montemurro**
- **Ariel Sharon**
- **Jon Rosdahl**
- **Bill Marshall**

**IEEE P802.11  
Wireless LANs**

**[Minutes of High Throughput Task Group .11n Session]**

Date: 2006-7-17

**Author(s):**

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**Abstract**

Cumulative minutes of the High Throughput Task Group meetings held during the IEEE 802.11 Plenary session in San Diego from July 17 through 21, 2006. The session was chaired by TGn chair Bruce Kraemer from Marvell.

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Executive Summary (also see Chairs' meeting doc 11-06-0957r5 and closing report doc. 11-06-1122r0):

1. Session focused on Comment Resolution; the number of comment resolutions accepted in 34 motions by the respective ad hocs were:
  - a. General –  $1+24+33+17+12+9+13+12+ 5+ 62+16+1 = 205$
  - b. Editorial – 6711
  - c. Phy –  $47+48+48 = 143$
  - d. MAC – 353
  - e. Frame Format –  $62+49+3+1 = 115$
  - f. Coexistence –  $64+65 = 129$
  - g. PSMP – 16
  - h. Beam forming and Link Adaptation –  $21+16+26+29+18+8+5 = 123$

For a total of 7795 comments resolved (49% of technical)! The numbers indicate the number of comments in particular motions wrt that ad hoc as taken from the minutes.
2. Draft approved for this session was D1.02
3. Important straw polls taken:
  - a. Shall we make processing GF preamble mandatory (for-48, against 78, abstain 9)
  - b. Shall we rename the control channel the Primary channel and the extension channel the Secondary channel for a 40 MHz channel (for-40, against-5, abstain-26)
  - c. Should L-STF be retained as an abbreviation (overwhelmingly for)
4. ANA Category code for .11n High Throughput was requested
5. Two Calls for Interest which will be vetted over the reflector:
  - a. Decouple MAC and Phy so MAC more independent of Phy – Jon Rosdahl to lead
  - b. Rationalize .11k (which is likely to finish before .11n) and .11n – Joe Levy to lead
6. Planning for September and November
  - a. Conference calls – Wednesdays, 11:00 to 13:00 ET starting August 2 through November 8
  - b. Special ad hoc Wednesday 9-13 through Friday 9-15 in Melbourne to resolve comments
  - c. Special ad hoc Tuesday 10-17 through Friday 10-19 in either Santa Clara or Boston to resolve comments
  - d. Special ad hoc Wednesday 11-8 through Friday 11-10 in Dallas to resolve comments
7. Time Line – D2.0 will likely be ready in January for another Letter Ballot; this would optimistically put publication of the standard out to April 2008

Note: Relative to presentations, these minutes are intended to offer a brief summary (including document number) of each of the presentations to facilitate review and recall without having to read each of the presentations. Most of the 'presentation related' minutes are built directly from selected slides and therefore are not subjective. An effort was made to note obscure acronyms. As always Q&A is somewhat subjective/interpretive on my part and therefore open to question.

\*\*\*\*\*

**Detailed cumulative minutes follow:****Monday; July 17, 2006; 4:00 PM – 6:00 PM [~ 110 attendees; 6 new]**

1. Meeting was called to order by TGn chair at 4:03PM
2. Chairs' Meeting Doc 11-06-0957rx
3. Chair read IEEE-SA Standards Board Bylaws on Patent Policy and additional Pat Com Guidance; chair noted Feb 2006 version
4. Chair reviewed topics NOT to be discussed during the meeting including – licensing, pricing, litigation, market share etc
5. Attendance reminder – Electronic using <http://newton/11/attendance> and manual
6. Chair reviewed history and timelines (slides 8) including goals and progress from inception for new members
7. Chair listed ad hocs formed for CR
8. CR summary to date is 43% of comments
9. Timeline reviewed and will be updated at the end of this meeting
10. Comments – change minutes from resolved to proposed resolutions
11. Reminders:
  - 11.1. Make sure your badges are visible especially when voting
  - 11.2. No company logos on presentations
12. Slide 13; Exec Summary from May minutes, 11-05-0721r1, presented
13. **Motion by Jim Petranovich to approve May minutes, 11-06-0721r2 with 'resolved' changed to 'proposed resolutions', was seconded by Jon Rosdahl and approved unanimously**
14. Chair noted CR doc numbers and status for ad hocs; current tally ~43% of technical
15. July objective – CR
16. Agenda discussion
17. All hands meeting – all day Thursday and Tuesday at 4 PM; ad hoc the remainder of the time
18. During CR of editorial comments – issue arose
  - 18.1. new versions of unapproved draft will be noted in the future by a simple one page submission to the wireless world reflector
19. Chair reviewed a projection of CR
20. Suggested that at least one ad hoc will be needed between now and September; two alternatives are California or Melbourne; which ever we choose the cost is ~\$300 and we need to decide this week since contracts need to be signed
21. Chair made a straw man's proposal for the agenda where the time for all-hands and ad hoc meetings was allocated. A discussion ensued and the following agenda was finally arrived at.

	July 17	July 18	July 19	July 20
	Monday	Tuesday	Wednesday	Thursday
am 1	8:00-10:00 8-11 TGn PHY ad hoc Man DEF	Ad hocs 1-Eliz DE MAC 2-Eliz F Phy 3-Eliz B PSMP 4-Eliz A Edit	Ad hocs 1-Eliz E Phy 2-Eliz D Mac 3-Eliz B Frame 4-Eliz A Gen	Full TGn Eliz DE
am 2	10:30- 12:30 Opening .11 Plenary	⊘	Mid-week .11 Plenary	Full PMC Eliz DE
pm 2	13:30- 15:30 ⊘	Ad hocs 1-Eliz E Coex 2-Eliz F Beam 3-Eliz B MAC 4-Eliz A Gen	Ad hocs 1-Eliz E Coex 2-Eliz C Frame 3-Eliz B PSMP 4-Eliz A Beam	Full TGn Eliz DE
pm 2	16:00- 18:00 Full TGn Eliz DE	Full TGn 5:30 end Eliz E	⊘	Full TGn Eliz DE
	19:30-21:30 ⊘	⊘	⊘	⊘

22. Chair called for interest in a Phy simulation BoF

23. Body agreed to a 4-6 PM on Wednesday; chair will find a room

24. Motion to approve July '06 TGn agenda as contained on slide 29-31 of 957r1 (with any minuted amendments) by Jon Rosdahl and seconded by Don Schultz was approved unanimously

25. Adrian Stephen's gave his Editor's report, 11-06-0910 r0

25.1. Editor recalled the goals from the May meeting

25.2. Split draft into sub documents

25.3. Reassembled draft and put in FrameMaker

25.4. Draft 1.01 in FrameMaker was put on server

25.5. Very close to 100% of editorial comments have resolutions proposed

25.6. There will be straw polls later in all hands meeting on the 6 Hard Editorials

25.7. Goal is to update to D1.02 for a vote on Thursday

25.8. Goals for September – incorporate all July changes into a new draft for the September meeting

25.9. Guidance templates to submission authors – in 11-06-0967r0

- 25.10. Template was presented
- 25.11. Editor then gave a ‘flavour’ of the current draft D1.01 July 06
- 25.12. Editors Straw Polls
  - 25.12.1.1. Control Channel renamed to Primary Channel and Extension channel to Secondary channel?
    - 25.12.1.1.1. Discussion – none
    - 25.12.1.1.2. Yes=40, No=5, Don’t Care (DC)=26
  - 25.12.1.2. Is High Throughput the right name for clause 21, and by implication, all HT features? Need a name which can act as a noun and an adjective;
    - 25.12.1.2.1. Discussion
      - 25.12.1.2.1.1. Won’t impact be significant?
      - 25.12.1.2.1.2. Suggest MIMO OFDM
      - 25.12.1.2.1.3. Marketing should be considered as in ‘n’; NSTA
      - 25.12.1.2.1.4. Need to separate Phy and MAC
      - 25.12.1.2.1.5. HT in the PAR
      - 25.12.1.2.1.6. n will be obsolete when ma 2007 is rolled out
      - 25.12.1.2.1.7. HT even though subject to obsolescence
      - 25.12.1.2.1.8. In future UHT, VHT, etc
    - 25.12.1.2.2. Should we keep HT; Yes=48, No=27, Don’t Care (DC)=16
  - 25.12.1.3. Names (transmitter/receiver, requester/responder, beamformer/beamformee); Are they all necessary?
    - 25.12.1.3.1. Discussion
      - 25.12.1.3.1.1. really need context
      - 25.12.1.3.1.2. how often do the terms above occur
      - 25.12.1.3.1.3. leave to discretion of the editor
      - 25.12.1.3.1.4. requester/responder is used more in MAC while Transmitter/receiver is used more in the PHY
    - 25.12.1.3.2. Defer to later
- 25.13. Room for PHY sim BOF is Elizabeth B on Wednesday at 4 PM
- 25.14. Motion to Recess TGn until Tuesday all-hands at 4 PM by Jon Rosdahl and seconded by Joe Levy**

### **Tuesday July 18; 4:00 PM**

1. Chair called meeting to order at 4:03 PM; doc 11-06-0957r3
2. Chair noted that our meeting needed to end 30 min early in order to reconfigure the room.
3. Jim Petranovich gave PHY CR update; 11-06-1047r0
  - a. There has been discussion of making Green field (GF) mandatory; Jim needs to get a sense of the group via a straw poll to know how to proceed with the PHY comment resolution
  - b. Jim held a coin toss to see if the proponent or opponent would go first; opponent of making it mandatory rec’d the right to go first
4. Bill McFarland, Atheros; 11-06-452r1; GF vs MM (mixed mode); opposed mandatory GF preamble
  - a. Extra 12 usec enables legacy devices to detect HT devices, simplifies receiving devices, allows the NAV to be calculated and finally supports beam forming
  - b. Concluded

- ⇒ Performance benefit of GF is marginal – just a few percent in likely scenarios
  - ⇒ GF creates legacy coexistence issues
  - ⇒ Overlapping BSS and scanning devices
  - ⇒ RTS/CTS protection is ineffective due to one bit parity, sleeping devices
  - ⇒ GF creates coexistence issues in pure HT (11n) networks that support different # of streams, STBC, LDPC (no L-SIG TXOP protection)
  - ⇒ GF creates implementation issues, increases solution cost, even if just decoding the HT-SIG
  - ⇒ All of these issues remain even if GF HT-SIG decoding is mandatory for HT devices
  - ⇒ Situations where GF is safe to use and beneficial will be rare
  - ⇒ We should *not* require all devices to implement Green Field HT-SIG decoding
- 

5. Richard van Nee, Airgo: 11-06-0971r; Supported Mandatory GF Preamble

a. Concluded:

- GF preamble has many advantages
  - Less overhead, better throughput
  - More power efficient
  - Better SNR performance
  - Keeping GF optional instead of mandatory has significant disadvantages
  - Interoperability problems
  - No evolution path towards future GF only networks
  - GF should be made mandatory
- 

6. Qs&As for:

- i. Bill - Remove short GI at the same time as keeping GF as optional? A – no, keep optional; it will never be compatible in a legacy network; can turn GF on but will need to run protection
- ii. Richard - MM only with GF sims; our sims showed false detect was the same? A – don't understand; what was SNR? What were the set of assumptions?
- iii. Bill – why did you say GF inhibits BF? A – channel smoothing, BF assumed if GF is detected

- iv. Richard – you say recall 11g vs b; this is not a valid comparison, legacy will not go away and yield GF only networks and the majority? A – optional preamble definitely confuses legacy devices
- v. Bill – what were throughput assumptions, MCS? A - see tables 300 mbps vs 65 mbps, if remove all cases including legacy devices there are very few cases left to take advantage of GF and it is difficult and expensive to test from a manufacturing viewpoint
2. Item #2 Frame ad hoc is not ready and offered to relinquish its time for further GF Q&A
3. GF Q&A continued:
  - i. Richard – how can GF devices be made to interoperate with legacy devices? A – use protection; refer to .11g analogy and using CTS to self
  - ii. Bill – g is dominant today and in 3 years n will be dominant, how can you continue to believe GF is a corner case? A – 12 us is measurable; 5 GHz is used by legacy devices today and will not be a GF only band in the future
  - iii. Bill – quantify RX complexity; what assumptions were made in your sims e.g., timing simulations? A – no complexity estimate to implement GF was made
  - iv. Bill – even though optional it will exist as they do now, how can a mm only device behave properly when a GF is on the air => major interoperability problems; make it mandatory? A – protection is good enough as they stand; in the end there are many protection options and the 12 us is very valuable in sorting out the MAC options
  - v. Bill – L-SIG is unreliable? A- only valuable at edges of network
  - vi. Bill – delta increase in complexity; A – did not do analysis
  - vii. Bill – packet acquisition techniques? A – looked at self correlation and cross correlation wrt CSDs makes timing difficult
  - viii. Both– 130 mbps and 1500 B payload cases, explain the 2x difference in your simulation results? Bill A – accounted for complete packet; Richard A – just the data portion
4. Straw Poll – Shall the ability to process GF preambles be mandatory; Yes = 48, No = 78, Abstain = 9
5. Richard Van Nee, Airgo; 11-06-0972r1; 40 MHz in 2.4 GHz issue
  - i. Conclusions:
    1. 20 MHz spacing between control and extension channel is a bad choice for 2.4 GHz as many legacy devices cannot properly receive the preamble, causing severe interoperability problems
  - ii. Preferred Solutions:
    1. Add duplicate 11b mode
    2. Simplest approach
    3. Works for legacy devices at any channel
    4. Use 25 MHz spacing in legacy duplicate OFDM mode and/or in MM preamble
    5. Used to turn off CTS-to-self protection when there are no neighbor APs with a 5 or 10 MHz offset from control or extension channel
6. Jon Rosdahl, Samsung; re - CID 10465; 11-06-0962r0 is the comment resolution document
7. **#1 - Motion to accept 06-962r0 as resolution to CID 10465 by Jon Rosdahl was seconded by Joe Levy**

- 8. Discussion:
  - i. Editor needs to rationalize the use of non-HT
- 9. **Motion passed unanimously**
- 10. **Motion to recess at 5:56 PM until Thursday 8:00 AM all hands meeting by Jim Petranovich and seconded by Marc de Courville passed unanimously**

**Thursday 8:00 AM**

- 1. Chair called the meeting to order at 8:08 AM
- 2. Chair reviewed plans for the day per the agenda (11-06-0957r5)
- 3. Chair presented an ad hoc presentation plan/motion plan (slide 44)

			Comment Resolution Spreadsheet	Motions + Polls	Report	Motions	Strawpolls	Call for interest
Ad Hoc Topic	Ad hoc leader	Time (minutes)						
General	Jon Rosdahl	45	688 r21	688 r21		4	0	1
Editorial	Adrian Stephens	45	706 r9		910 r1	3	?	
PHY	Jim Petranovich	45	693 r29	1075 r0		3		
CA Doc	Sheung Li	10	731 r3			0	0	
MAC	Matt Fischer	20	690 r20	1087 r0		1		
PSMP	Naveen Kakani	30	687 r21	1099 r0		1		
Frame Format	Peter Loc	45	690 r20	1048r0	982r0	1		
Coexistence	Don Schultz	45	724 r14	724r15		2	1	
Beamforming & Adaptation	John Ketchum	45	675 r22	1081 r1	1100 r1	7	0	0
	Joonsuk Kim							
	Available	360						
	Request Total	330						
<b>Joint PHY + MAC</b>								

- 4. Jon Rosdahl (11-06-0688r22) TGn General Comment ad hoc group LB84
- 5. **#2 Motion by Jon Rosdahl and seconded by Dave Bagby to accept 11-06-0755r2 as a "counter" resolution for the listed CIDs passed unanimously without comment**
- 6. **#3 Move to accept the comment resolutions for the listed CIDs which pertain to clause 3 "Definitions" as listed in doc 06-0688r21 by Jon Rosdahl and seconded by Adrian Stephens passed unanimously and without comment**
- 7. **#4 Move to accept the comment resolutions for the listed CIDs which pertain to clause 4 "Abbreviations" as listed in doc 06-0688r21 by Jon Rosdahl and seconded by Don Shultz**
  - a. Discussion

- i. You mentioned that there was one abbreviation rejected, which one was that?  
A – comment on the definition of HT

**b. Motion passed unanimously**

- 8. #5 Move to accept the comment resolutions for the listed CIDs which pertain to clause 5 "General Description" as listed in doc 06-0688r21 by Jon Rosdahl and seconded by Joe Levy passed unanimously and without discussion**

9. Jon Rosdahl presented a Call for Interest:

The TGn draft does not adequately support the requirement for "1 MAC, multiple PHYs" as it is written. The draft has the TGn MAC and the TGn Phy coupled much too closely. The MAC operation has to be independent of the PHY operation. For example, the interfaces need to be sufficiently specified that the TGn MAC enhancements could be used with (for example) the .11G PHY. This would be an excellent test case for seeing if the specification is appropriately written. As written, the reviewer has serious concerns that it will be very difficult to specify a future PHY after TGn.

- a. Jon will follow up with an email on reflector
- b. Discussion – reconsider after Jon's email

10. Adrian Stephens re editorial changes (11-06-0910r1)

**#6 Move to accept the LB84 comment resolutions shown in document 11-06-0706r9 on the "Motion 1" tab by Adrian Stephens and seconded by Jim Petranovich passed unanimously without discussion**

**#7 Move to accept document [11-06-1043-00-000n-proposed draft \(1.02\).pdf](http://grouper.ieee.org/groups/802/11/private/Draft_Standards/11n/index.html)**

located in [http://grouper.ieee.org/groups/802/11/private/Draft\\_Standards/11n/index.html](http://grouper.ieee.org/groups/802/11/private/Draft_Standards/11n/index.html)

**as Draft P802.11n D1.02. by Adrian Stephens and seconded by Don Schultz**

**a. Discussion**

- i. this is the only draft revision for approval to be considered in this session
- ii. some additional edits have been discovered (2 in the case in point)
- iii. Editor said he was ambivalent
- iv. Procedure – if 1.02 is ratified can we still reference draft 1.0 in our comments
- v. Chair – should submit comments whenever they arise
- vi. Submissions should reference the latest draft however
- vii. Roughly when will a draft appear that will reflect the decisions we have made today? A – edits in about 3 weeks; draft for feedback by next meeting
- viii. After these motions have been approve the editor will incorporate them into the next draft which must be formally approved at the next meeting. A – yes we have a two step approval process in the TG

**b. Motion passed unanimously**

**11. #8 Move to request the 802.11 Assigned Numbers Authority (ANA) to assign to 802.11 TGn a Category Code for "HT (High Throughput)" by Adrian and seconded by Matt Fischer passed unanimously without discussion**

12. Jim Petranovich lead the discussion of PHY motions as documented in 11-06-1075r0

**13. #9 Move by Jim Petranovich and seconded by Assaf Kasher to accept resolution proposed in 11-06/0693r29 of the comments (found worksheet "Motion Set 0") with the CIDs:**

---

97	7519	179	3925	382
359	3443	198	6362	380
99	12139	201	10750	453
209	150	203	334	498
123	145	204	502	7514
124	7380	3466	561	3484
130	146	215	3927	501
7379	157	3998	3997	331
132	154	332	355	560
141	156	2977	379	2963

---

## a. Discussion:

- i. Wrt 11-06-0693r29 – CIDs 7380, 150, 145 have resolutions which are inconsistent with the comment? A – agree they should be removed
- ii. Spread sheet line 41 – accepted comments as it stands if resolution is blank
- iii. In future should move comment into resolution field even if accepted

- b. Motion to amend to remove the CIDs in red above by Jim Petranovich and seconded by Adrian Stephens passed unanimously without further discussion

## c. Main motion as amended passed unanimously without discussion

**14. #10 Move by Jim Petranovich and seconded by Venko Erceg to accept resolution proposed in 11-06/0693r29 of the comments (found worksheet “Motion Set 1”) with the CIDs:**

563	1533	2954	3005	3465
844	1541	2960	3389	3474
847	1632	2976	3431	3475
883	2917	3024	3432	3476
934	2919	2961	4021	3486
936	2920	2975	3433	3598
937	2929	2968	140	3912
938	2930	10745	3436	3920
939	2937	2998	12135	3924
1510	2943	2999	3457	12142

---

- a. Discussion
- i. PICS should reflect the mandatory normative text in the draft and is derived from the text? A- yes this is the rule
  - ii. CID 3598 – resolution inconsistent with comment A – OK will amend
  - iii. CID 1533 – if resolution blank comment was accepted as submitted
  - iv. CID 883 – somewhat ambiguous; will editor be able to resolve? A – Chair said if the editor does not see the resolution as obvious he will bring it back to the body for discussion
  - v. CID 2916 – resolution inconsistent with comment? A – comment is correct as is
  - vi. CID 2968 – resolution inconsistent with comment? A – comment is correct as stands
  - vii. CID 3486 – disagrees with resolution and wants to amend? A – make a motion to amend
  - viii. CID 2943 – where is informative text? A – will just add a note – MAC may use this field to expedite processing
  - ix. Editor – if there are technical ambiguities the editor will bring it to the body
  - x. Maybe should bring resolutions as a subject matter block
  - xi. Phy ad hoc has processed about 60% of 700 PHY comments and resolved about 40%
- b. Motion to amend to remove two CIDs – 3486 and 3598 shown in red from the main motion by Jim Petranovich and seconded by George Vlantis passed unanimously without further comment
- c. Main motion as amended passed without objection**
- 15. # 11 Moved by Jim Petranovich and seconded by Assaf Kasher to accept resolution proposed in 11-06/0693r29 of the comments (found worksheet “Motion Set 2”) with the CIDs**

4001	4033	11925	7049	7405
4002	7458	4857	3438	8219
185	4416	7721	4665	7513
4005	4466	4874	7050	7515
4019	4539	4882	7052	7533
4022	4662	4892	7387	7534
12129	4676	6315	7398	3463
12149	4818	7156	7399	7537
4027	4827	6770	7400	4856
7452	4835	6771	7402	7720

- a. Discussion:
- i. CID 7402 resolution is inconsistent with comment? A – agree and will remove

- ii. CID 4416 comment not understood, is that a reason to reject? A – editor said this has been dealt with as an editorial comment and recommends removal from this motion
- iii. CID 185 was resolution accepted? A – yes
- b. Motion to amend to remove two CIDs – 4416 and 7402 shown in red above from the main motion by Jim Petranovich and seconded by Don Schultz passed without further comment
- c. Main motion passed unanimously without further comment

**16. Motion to recess by Ken Clements and seconded by Adrian Stephens to recess until 10:30 passed unanimously without discussion**

17. Chair reconvened the meeting at 10:42 AM

18. Sheung Li 1108r0

19. Matt Fischer 1087r1; MAC Comments from LB84;402 comments out of 556 comments have had proposed resolutions

**20. # 12 Motion by Matt Fischer and seconded by Solomon Trainin to approve the comment resolutions shown in the 'MAC motion 1' tab of document 11-06-0690-20-tgn-d1-0-lb84-mac.xls, excluding those comments where the "Duplicate of CID" field is not empty and comments CIDs 7228,9963, 3719, 1333, 7345, 1738, 3725**

- a. Discussion
  - i. CID 7228 – resolution not clear; please pull A – OK
  - ii. CID 9963 and 3719 resolutions are contradictory please remove? A – OK
  - iii. CIDs 1333 are not clear re: RIFS; please remove? A- OK
  - iv. CID 10361 was rejected; why? A – Darwin was OK with rejection per Bruce
  - v. CID 7345 was rejected; why? A – an issue for TGm; Jesse needs to comment and the action item is open; let's leave unresolved and exclude
  - vi. CID 1267 was rejected; why? A – it's a joke and stands
  - vii. CIDs 7228, 1738, 3725 re ACK policy? A – Table was modified but still needs work so will remove
  - viii. CID 3850; should we have the RIFS prohibition bit? A – resolution adds clarity but OK let's
  - ix. CID 2383 thought it was deferred? A – agree to exclude as it is an editing error
  - x. CID 5129, 6890, 7575, 9954, 10133 resolutions reference resolution to
  - xi. CID 3852 resolution column was marked wrong? A – agree and will fix column
- b. Motion by Matt Fischer and seconded by Solomon Trainin to amend the main motion by excluding the following CIDs from the motion - 7228, 9963, 3719, 1333, 7345, 1738, 3725, 3850, 2383, 5129, 6890, 7575, 9964, 10133 passed unanimously and without further discussion
- c. **Vote on main motion as amended passed unanimously without further discussion**

21. Naveen Kakani lead discussion on PSMP ad hoc group as in 11-06-1099r1

22. Naveen said his document missed the four hour rule by 1 hour and therefore will be deferred to the first slot in the afternoon session

23. Peter Loc lead discussion on Frame Format as in 11-06-1048r0

**24. #13 Motion by Peter Loc and seconded by Don Schultz to accept the resolutions to the CIDs below with the exception of CID 3700 which were unanimously ACCEPTED in the frame ad hoc group as contained in document 11-06-0717r20**

CID #	Sub-clause	CID #	Sub-clause	CID #	Sub-clause	CID #	Sub-clause	CID #	Sub-clause
1107	7	610	7.1.3.5	1939	7.1.3.8	3733	7.2.3.4	633	7.3.2.47.1
3696	7	8109	7.1.3.5.3	1135	7.2.2	1157	7.2.3.5	3411	7.3.2.47.1
3697	7	7574	7.1.3.5.3	12255	7.2.2.1	2022	7.2.3.6	1181	7.3.2.47.1
3699	7	1122	7.1.3.5.6	1144	7.2.2.1	1159	7.2.3.6	635	7.3.2.47.2
1110	7.1	7224	7.1.3.5.6	1138	7.2.2.1	2026	7.2.3.7	3412	7.3.2.47.2
1899	7.1	616	7.1.3.8	1991	7.2.2.1	3736	7.2.3.7	2138	7.3.2.47.2
1114	7.1.2	612	7.1.3.8	25	7.2.2.1	2031	7.2.3.8	2140	7.3.2.47.2
3700	7.1.2	613	7.1.3.8	4606	7.2.2.1	1163	7.2.3.8		
1115	7.1.3.1.10	1927	7.1.3.8	1992	7.2.2.1	3738	7.2.3.9		
9955	7.1.3.1.10	1928	7.1.3.8	728	7.2.2.1	632	7.3.2.20A		
1116	7.1.3.1.5	8112	7.1.3.8	1141	7.2.2.1	7235	7.3.2.29		
4049	7.1.3.1.5	12091	7.1.3.8	3729	7.2.2.1	3745	7.3.2.29		
1118	7.1.3.2	1123	7.1.3.8	1142	7.2.2.1	7353	7.3.2.47		
1119	7.1.3.2	1126	7.1.3.8	1143	7.2.2.1	1182	7.3.2.47.1		

a. Discussion

i. Was this the only exception? A – yes

**b. Motion passed unanimously without further comment**

**25. #14 Motion by Peter Loc and seconded by Ali Raissinia to accept the resolutions to the CIDs below which were COUNTERED in the frame ad hoc group as contained in document 11-06-0717r20 passed unanimously without further comment.**

1120	7.1.3.5.3	3727	7.2.2.1	4060	7.2.3.4	3746	7.3.2.47.1
6891	7.1.3.5.3	4261	7.2.2.1	4061	7.2.3.5	4339	7.3.2.47.1
4050	7.1.3.5.6	10097	7.2.2.1	4062	7.2.3.6	1183	7.3.2.47.1
464	7.1.3.8	1990	7.2.2.1	4063	7.2.3.7	7358	7.3.2.47.1
1925	7.1.3.8	1139	7.2.2.1	4064	7.2.3.7	771	7.3.2.47.2
10069	7.1.3.8	1999	7.2.2.2	4065	7.2.3.8	2130	7.3.2.47.2
1125	7.1.3.8	1146	7.2.2.2	4066	7.2.3.8	4348	7.3.2.47.2
7299	7.1.3.8	4056	7.2.2.2	4067	7.2.3.9	5140	7.3.2.47.2
4552	7.1.3.8	491	7.2.2.2	26	7.3.1.9	7303	7.3.2.47.2
1932	7.1.3.8	2002	7.2.2.2	3742	7.3.1.9	3754	7.3.2.47.2
1936	7.1.3.8	4057	7.2.3.1	4634	7.3.1.9	3755	7.3.2.47.3
1937	7.1.3.8	4058	7.2.3.1	470	7.3.2.47.1		
7188	7.1.3.8						

**26. #15 Motion by Peter Loc and seconded by Tim Towell to accept the resolutions to the CIDs below which were REJECTED in the frame ad hoc group as contained in document 11-06-0717r20.**

Note: Peter excepted the following CIDs 20, 3704, 7352, 1150, 2007, 4281, 3741, 3744, 6812 and 28 PRIOR to presenting the motion due to comments he received this morning hence the blank entries in the table

CID #	Sub-Clause	CID #	Sub-Clause	CID #	Sub-Clause	CID #	Sub-Clause
1514	7.1.2	1929	7.1.3.8	4260	7.2.2.1		7.3.1.7
1733	7.1.3.1.10	3910	7.1.3.8	4607	7.2.2.1	2117	7.3.2
10301	7.1.3.1.10	8274	7.1.3.8	8116	7.2.2.1		7.3.2.29
1117	7.1.3.2	11982	7.1.3.8	3409	7.2.2.1	2133	7.3.2.47.2
3703	7.1.3.5	1933	7.1.3.8		7.2.2.1		7.3.2.47.2
	7.1.3.5	615	7.1.3.8	727	7.2.2.1		7.3.2.47.2
1758	7.1.3.5.3	1934	7.1.3.8	1997	7.2.2.2	1744	7.3.2.47.2
1121	7.1.3.5.3	1935	7.1.3.8	1998	7.2.2.2	4635	7.3.2.47.2
7351	7.1.3.5.3	1938	7.1.3.8	3731	7.2.2.2	7360	7.3.2.47.2
	7.1.3.5.3	12018	7.1.3.8		7.2.2.2	2136	7.3.2.47.2
4051	7.1.3.5.6	1946	7.1.4	1147	7.2.2.2	2137	7.3.2.47.2
764	7.1.3.5.6	1734	7.1.4	2007	7.2.3.1	2141	7.3.2.47.2
1132	7.1.3.8	1986	7.2.2	4281	7.2.3.1	6902	7.3.2.47.2
3714	7.1.3.8	1740	7.2.2	8117	7.2.3.1	7173	7.3.2.47.2
1924	7.1.3.8	7812	7.2.2	767	7.2.3.4	492	7.3.2.47.2
1926	7.1.3.8	1987	7.2.2.1	2034	7.2.3.8	3751	7.3.2.47.2
						3752	7.3.2.47.2

- a. Motion to amend by Matt Fischer and seconded by Venko Erceg to add back into the main motion CIDs 1740, 2007, 4281
- b. Discussion:
  - i. OK with bringing back 1740
  - ii. Disagree with bringing back 2007
  - iii. Don't know about 4281
  - iv. Editor has reviewed and speaks in favour of bringing back these CIDs
  - v. Let's just not bring them back and let the commenter who is not here present his case
  - vi. There are no other alternatives for 1740
  - vii. 2007 and 4281 refer to 2125 which is still open for discussion so he can present his case
- c. Motion to call the amendment question by Anuj Batra and seconded by Assaf Kasher passed unanimously
- d. Vote on the motion to amend passed (34,25,14)
- e. No further discussion on the main motion
- f. **Vote on the main motion failed (46, 19, 9) at 71% as it is technical and requires 75% to pass**

27. The FF ad hoc Group wanted to propose text to resolve the following CIDs

- a. CID 11993  
Add capability of HTC support

- b. CID 7582  
All the features of the HTC are optional. It should therefore be possible to simplify the implementation of a device that does not support any of the HTC features.
- c. CID 1149  
Is there any restriction on the use of the QOS NULL + HTC + MA?
28. Solomon Trainin presented submission 11-06-1026r0; HTC Capability to resolve CIDs 1149, 7582, 11993
- a. Discussion
- i. Use the word Shall
  - ii. Third Party? A – neighbouring station
  - iii. Alternative name for? bit
  - iv. Needs rewording
  - v. Strike use of Third Party
  - vi. 3<sup>rd</sup> party – not the intended recipient
  - vii. Multiple receivers – they can ignore
  - viii. Just adding a capability bit
  - ix. A STA that does not support HTC control field
- a. Due to the discussion over the text of the proposed resolution Peter and Solomon decided to change the text and resubmit after lunch as an amendment
29. Don Schultz presented 11-06-0724r15; Coexistence Ad Hoc Update
- a. Still have 71% of comments to resolve
  - b. Don needs more participation
  - c. Don will bring two motions to the body after lunch
30. Chair recessed the meeting until 1:30 PM at 12:27 PM
31. Chair called TGn back to order at 1:35 PM
32. Solomon Trainin presented his edited version as 11-06-1026r1 with the change shown in red below (i.e., removed reference to 3<sup>rd</sup> party)  
Indicates support of the High Throughput Control field. A High Throughput Control field shall only be present in a frame addressed to a receiver that declares support for +HTC. **A HT STA that does not support +HTC shall decode the order/HTC bit and perform the** CRC on the extended length of the MPDU in order to properly respect any Duration field setting.
- a. Discussion – none
- 33. #16 Motion by Peter Loc and seconded by Sanjiv Nanda to instruct the editor to make the modification to the draft based on submission 11-06-1026-01-000n-tgn-lb84-htc-capability submission.doc passed unanimously without further discussion**
34. Don Schultz reintroduced Coexistence ad hoc update/motions in 11-06-0724 r15
- 35. #17 Moved by Don Schultz and seconded by Assaf Kasher to accept the comment resolutions (A,C,R) for the CIDs below that were unanimously ACCEPTED in the ad hoc as contained in 11-06-0724-15-000n-tgn-d1-0-lb84-coexist-com-res.xls**

4509	6765
2087	7336
2088	1298
813	868
3415	1299
4521	1300
2235	2555
1209	1301
10167	3840

1234	5152
2249	1303
1233	3841
3421	7308
3804	9996
1423	7609
7655	1304
46	1307
7654	1329
1426	1328
1428	6781
4565	1306
3874	671
7275	1308
7276	6782
3873	1311
7658	9998
4343	36
11996	4638
10023	7889
6806	9999
4567	7337
4341	1313
1297	6786
4078	3838
7335	3839

a. Discussion

- a. CID 1209 should have an A instead of a C
  - b. CID 3874 counters itself? A – OK lets except
  - c. CID 1298 should be deferred but says accepted? A- OK lets except
  - d. Let's not include recommendations in motion in the future? A – OK
  - e. CID 4341 should be counter? A – disagree but will exclude from motion
  - f. CID 9996 and 9998 were rejected but floor wanted to make a presentation so would like excluded A – OK
  - g. How do we rationalize our decisions here with what the ad hoc group decided? A – chair said the CIDs will go back to ad hoc
  - h. CID 9996 and 9998 have already been discussed at length so let's not except them again to save time
  - i. Due to parallel sessions some in the body are hearing objection for the first time
- b. Motion to amend by Don Schultz and seconded by Jim Petranovich to EXCLUDE the CIDs in red above, 1209, 3874, 1298, 4341, 9996, 9998 from the main motion passes (28,22,10)
  - c. Further discussion on the main motion as amended? None
  - d. **Vote on main motion passes (52,0,9)**

**36. #18 Moved by Don Schultz and seconded by Rolf de Vegt to accept the comment resolutions (A,C,R) for the CIDs below that were unanimously ACCEPTED in the ad hoc as contained in 11-06-0724-15-000n-tgn-d1-0-lb84-coexist-com-res.xls**

1314	11734
10000	296
1318	2740
6788	11736
6789	50
10001	1453
1309	7895
7612	2742
7613	3883
9983	51
1316	1454
1317	7768
3848	7896
781	7924
68	7283
293	1456
1321	1455
3849	1457
1323	7841
10002	1458
2570	1459
2571	1460
2572	3889
7338	3887
10003	7284
1326	2744
1327	11741
2734	7675
1445	1461
5122	7679
7340	4018
2739	6759
10019	7155
1302	7364

- a. Discussion
  - i. CIDs 1000 and 1001 should be excluded since they are related to the excluded CIDs above? A - OK
  - ii. CID 7613 deserves more discussion and should be excluded for now? A – OK
  - iii. We should group the comments in future or else vote on them one at a time
- b. Motion to amend by Don Schultz and seconded by Jim Petranovich to EXCLUDE the CID10000 in red above from the main motion passed (27,24,5)
- c. Motion to amend by Don Schultz and seconded by Jim Petranovich to EXCLUDE the CID10001 in red above from the main motion passes (28,24,8)
- d. Motion to amend by Don Schultz and seconded by Jim Petranovich to EXCLUDE the CID 7613 in red above from the main motion passes (26,24,8)
- e. **Vote on main motion passes (47,3,3)**

37. #19 Motion by Naveen Kakani and seconded by Matt Fischer to accept the resolutions to 18 CIDs in the motion 1 tab of doc 11-06-0687r21 excluding CID 9897 and 1048 passed unanimously and without comment

38. Yoonsuk Kim reported on BF and LA ad hoc group in 11-06-1100r1  
 a. As of the end of July 19, 2006, the beam forming and link adaptation group has processed 411 comments of the 417 comments.

a. status (column N)	b. Meaning	c. count	d. %
e. A	f. Accepted	g. 66	h. 16
i. C	j. Countered	k. 37	l. 9
m. R	n. Rejected	o. 76	p. 18
q. W	r. Withdrawn	s. 1	t. <1
u. T	v. Transferred	w. 1	x. <1
y. D	z. Deferred	aa. 230	bb. 55
cc. Ü	dd. unaddressed	ee. 6	ff. 1
gg. Total	hh. Total	ii. 417	jj. 100

39. John Ketchum presented the motions in 1081r4

40. #20 Clause 7 Motion 1 [as amended by John Ketchum and Anuj Batra (r23 -> r24)]: by John Ketchum and seconded by Anuj Batra to accept Accepted and Countered comments in document 11-060675 r23-000n-d1-0-lb84-beamforming-and-adaptation.xls. CIDs **11887**, 4200, 4204, 4302, 3813, 3976, 2288, 978, 979, 2333, 2334, 2346, 7226, 2262, 2287, 663, 12108, 3805, 2252, 2266, 3811, 3815

2164, 2165, 2265, 8029, 7822, 2275, 3977, 7131, 12099, 2278, 2300, 2298, 984, 985, 2324, 2325, 2282, 2299, 8030, 2305 not included in motion due to potential conflicts with other resolutions.

Otherwise agreed unanimously in ad hoc

- a. Discussion:
  - i. CID 11887 should be excluded

- b. Motion to amend by excluding 11887 in red above from motion #20 by John Ketchum and seconded by Jim Petranovich passed unanimously and without comment
  - c. **Main motion as amended passed unanimously and without further comment**
41. #21 Clause 7 Motion 2 as moved by John Ketchum and seconded by Jim Petranovich to accept Rejected comments in 11-060675 r23-000n-d1-0-lb84-beamforming-and-adaptation.xls. CIDs 3709, 2161, 772, 472, 2250, 2264, 10168, 2261, 7130, 10169, 1237, 4749, 2271, 1239, 10170, 12097, 3979, 1241, 10171, 3983, **10172, 986, 1243, 2339, 11461, 2342, 10173**
- 2269 not included due – no reason given for rejection
- Otherwise agreed unanimously in ad hoc
- 
- a. **Discussion**
    - i. Remove CID 3979, 3983 from the list because the resolution is deemed incorrect
    - b. Motion By Jon Ketchum and seconded by Assaf Kasher to amend main motion to exclude CID 10168, 10169, 1237, 1239, 10170, 1241, 10172, 986, 1243, 10173, 10171 passed unanimously
    - c. Returning to the main motion, it passed unanimously without further comments
42. Chair recessed session at 3:31 PM until 4:00 PM
43. Chair reconvened at 4:01 PM
44. **Motion by Adrian Stephens and seconded by Don Schultz to request authorization for TGn to conduct teleconferences for the purpose of comment resolution every Wednesday from 11:00 to 13:00 ET from 02-August to 08-November, 2006. passed unanimously and without comment**
45. **Motion by Assaf Kasher and seconded by Adrian Stephens to request authorization for TGn to conduct an ad hoc meeting for the purpose of comment resolution from Wednesday 13-September through Friday 15-September, 2006 at the Melbourne Exhibition Centre, Melbourne, AU passed unanimously and without comment**
46. Timeline discussion: ballot release by year end requires the following motion in order to reserve conference room space
47. Discussion:
  - a. Don't do pre-meeting at the airport in Dallas
  - b. Isn't the Nov meeting premature
  - c. Straw poll first to see if an October meeting would be well attended seems to be in order
  - d. Reason for such advance notice is to get good hotel rates
48. Straw poll to attend a west coast ad hoc in October (yes – 28)
49. Straw poll to attend ad hoc in Nov before IEEE session (yes – 35)
50. Straw poll to attend a west coast ad hoc in October Tues thru Thursday instead of Wednesday through Friday (yes=33)
51. Straw poll to attend ad hoc in Melbourne prior to the 802.11 meeting (yes= 25)
52. Straw poll West coast or Boston in October (Santa Clara = 46) (Boston = 28)
53. **Motion by Joe Levy and seconded by Don Schultz to request authorization for TGn to conduct an ad hoc meeting for the purpose of comment resolution from Tuesday 17-**

October through Thursday 19-October, 2006 at or near the Hyatt Great America, Santa Clara, CA. or in the Boston area with final approval in the September meeting. Passed unanimously without further discussion

54. **Motion by Adrian Stephens and seconded by Joe Levy to request authorization for TGn to conduct an ad hoc meeting for the purpose of comment resolution from Wednesday 8-November through Friday 10-November, 2006 at or near the Dallas Hyatt Regency, Dallas, Texas passed unanimously without further comment**
55. Timeline discussion:
- Given Pre-Sept, Sept, October, pre-Nov, Nov meetings
  - And Goal to release next draft, D 2.0 for LB in January
  - Let's think on this and return to technical motions
56. **#22 Motion by Jon Rosdahl (11-06-688r23) and seconded by Don Schultz to move to accept the comment resolutions for the listed CIDs - 756, 997, 3903, 3909, 6853, 7339, 8285, 10342, 4782 - which describe a general comment on the quality of the draft as listed in doc 11-06-0688r22 passes unanimously without comments**
57. **#23 Motion by Jon Rosdahl (11-06-688r23) and seconded by Don Schultz to move to accept the comment resolutions for the listed CIDs - 4709, 3140, 10548, 7120, 11981, 7549, 10375, 2911, 4020, 559, 2914, 2950, 3442 - which reference Clause 20 and its sub-clauses as listed in doc 11-06-0688r21**
- Discussion:
    - What were rejected comments? A – Jon reviewed them
  - Motion passes unanimously without comments**
58. **#24 Motion by Jon Rosdahl (11-06-688r23) and seconded by Adrian Stephens to move to accept the comment resolutions for the listed CIDs -57, 685, 686, 3142, 3143, 3145, 3146, 3147, 8054, 10081, 10318, 10345 - which reference Annex A (PICS) as listed in doc 11-06-0688r21 passes unanimously without comments**
59. **#25 Motion by Jon Rosdahl (11-06-688r23) and seconded by Brian Hart to move to accept the comment resolutions for the listed CIDs -11775, 11774, 1792, 11776, 11777 - which reference Boiler Plate as listed in doc 11-06-0688r21 passes unanimously without comments**
60. **#26 Motion by Jon Rosdahl (11-06-688r23) and seconded by Adrian Stephens to move to accept the comment resolutions for the listed CIDs - 62, 3153, 3154, 3155, 3156, 3157, 3158, 3159, 3160, 3161, 3162, 3163, 3164, 3165, 3166, 3167, 3168, 3169, 3170, 3171, 3172, 3173, 3174, 3175, 3176, 3177, 3178, 3179, 3180, 3181, 3182, 3183, 3184, 3185, 3186, 3187, 3188, 3189, 3190, 3191, 3192, 3193, 3194, 3195, 3197, 3198, 3199, 3200, 3201, 3202, 3203, 3205, 3209, 3210, 3211, 3212, 3214, 3215, 3216, 3217, 3218, 10346 - which reference Annex D (MIB) as listed in doc 11-06-0688r21 passes unanimously without comments**
61. **#27 Motion by Jon Rosdahl (11-06-688r23) and seconded by Derrick Waters to move to accept the comment resolutions for the listed CIDs - 64, 422, 425, 482, 687, 998, 1484, 1491, 1572, 1658, 1659, 1752, 3905, 7354, 8123, 10350 - which referenced General category as listed in doc 11-06-0688r22 passes unanimously without comments**
62. **#28 Motion by Jon Rosdahl (11-06-688r23) and seconded by Brian Hart to move to accept the comment resolution for CID 6940 which referenced Clause 9.23.5 as listed in doc 11-06-0688r21 passes unanimously without comments**
63. Call for Interest: Joe Levy is willing to lead a group to discuss and coordinate this topic with TGk – TGn is asked if this group should report via the General Ad Hoc group or directly to TGn? Send email to Jon Rosdahl or Joe Levy if interested in helping resolve
- Chair asked that the topic be vetted over WG reflector and not just the 11n or 11k reflector

64. With the passing of these motions the General ad hoc group is at >80% complete
65. **#29 Clause 9 Motion 1 by John Ketchum and seconded by Peter Loc to accept Accepted and Countered comments. CIDs 3870, 1408, 1409, 1412, 1413, 1414, 880, 7651, 1421, 11891, 7369, 7141, 10079, 709, 787, 1430, 1431, 7189, 11892, 7142, 4779, 2705, 1442, 1443,12001,1434 in 11-06-0675r23**

1436, 7140, 1653, 1437, 4786, 4790 not included in motion due to potential conflicts with other resolutions

Agreed unanimously in ad hoc

**a. Passed unanimously and without comment**

66. **#30 Clause 9 Motion 2 by John Ketchum and seconded by Solomon Trainin to accept Rejected comments. CIDs 2634, 2635, 2636, 3871, 1748, 2652, 788, 789, 45, 2655, 881, 7274, 2660, 2661, 2662, 7367, 793, 7190, 2677, 794, 7279, 2700, 711, 4787, 4527, 2717, 2721, 3879, 3878, 2731, 7191 as in 11-06-0675 r25**

Agreed unanimously in ad hoc

a. Discussion

i. CID 7274 should be excluded from the motion

- b. Motion to amend by John Ketchum and seconded by Anuj Batra to exclude the rejection of CID 7274 from the motion passed unanimously and without further comments

**c. Main motion passes unanimously without further discussion**

67. **#31 Clause 20 Motion 1 by John Ketchum and seconded by Eric Tokubo to accept Accepted and Countered comments. CIDs 3085, 953, 3086, 10880, 955, 11900, 965, 11901, 11902, 5061, 3964, 5069, 11906, 956, 7104, 7105, 6764, 959, 958, 967, 964, 3096, 5075, 264 in 11-06-0675 r 25**

Agreed unanimously in ad hoc

- a. Motion to amend by John Ketchum and seconded by Solomon Trainin to exclude CIDs 5075, 264 in red above from the motion passed unanimously and without further comment

**b. Main motion passes unanimously and without further comment**

68. **#32 Clause 20 Motion 2 by John Ketchum and seconded by Rolf de Vegt to accept Rejected comments. CIDs 8140, 8196, 4698, 4701, 262, 4703, 3097, 10891, 10264, 7114, 8143 in 11-06-0675r23**

1073, 4161, 968 not included in motion

Agreed unanimously in ad hoc

a. Discussion

i. CID 8140 exclude

ii. CID 8196 exclude

iii. CID 8143 exclude

- b. Motion to amend to exclude by John Ketchum and seconded by Anuj Batra passed without objection
  - c. **Main motion passed unanimously and without further comment**
- 69. #33 Motion by Peter Loc and seconded by Matt Fischer to NOT exclude CID 1740 from the list of REJECTED comments as contained in 11-06-0717-20 passed unanimously without further comments**
70. Returning to Timeline discussion
- a. Scenario A – optimistic Publish – April 2008
  - b. Scenario B – pessimistic Publish – Nov 2008
71. Discussion
- a. What is downside of choosing the more optimistic scenario? A – none
- 72. Motion to amend timeline to reflect Scenario A by Don Schultz and seconded by Venko Erceg passed unanimously and without further discussion**
- 73. #34 Motion by John Ketchum and seconded by David Bagby to approve CIDs 761, 7556, 3681, 1103, 6836 in 11-06-0675r23 for disposition by the editor was accepted unanimously and without further comments**
- a. Discussion:
    - i. Leave it up to editor or
    - ii. Just ignore it for now
  - b. Decided on the editor approach as reflected in the motion
74. August 2<sup>nd</sup> Teleconference – Jim Petranovich
75. Straw poll to replace L-STF with NHT-STF? (yes - 6, No – many)
- a. Discussion:
  - b. L-STF should be kept
  - c. Why not MM-STF?
  - d. Per the straw poll there will be no change in L-SIG
76. Chair adjourned the July session until September at 5:59 PM

## IEEE P802.11 Wireless LANs

### July 2006, TGp/WAVE Minutes

Date: 17 – 21 July 2006

**Author(s): Filip Weytjens (TransCore)**

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### Abstract

This document includes the meeting minutes for the IEEE 802.11 TGp WAVE Task Group held in San Diego, CA from July 17<sup>h</sup> to 21<sup>th</sup>, 2006, under the TG Chairmanship of Harry Worstell and editor Wayne Fisher of ARINC. Minutes are taken by Filip Weytjens of TransCore.

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**Tuesday July 18, 2006, 8:00 AM Session**

Harry Worstell stepped in as the chair of the TGp working group as Lee was not able to make it to the meeting this month. Harry opened the meeting at 8:00 AM.

The policies, rules, and procedures were presented to the working group. (doc.: IEEE 802.11-06/747r0). It was requested whether there were known patents that needed to be identified to the group. No patents were identified.

The main objective of the meeting was to resolve the comments received on the draft document.

Harry discussed the agenda and requested whether the agenda was acceptable as submitted to the server. A discussion on the following documents was added to the agenda :doc nr. 06/890r3 (Justin), 06/1005r0 (Bryan), 06/1017r1 (Acosta). Also a discussion on clause 20 was added.

Any objection to the changes. No. Any objection for approving the agenda by unanimous consent. No. The Jacksonville, Fl meeting minutes were updated and approved by unanimous consent.

The ad-hoc meeting minutes were approved by unanimous consent.

Harry discussed the two options we had available; to proceed with the existing draft or start a new document. It was requested who would want to present a motion to address these options. Broady volunteered. The motion reads:

“Motion to adopt the document P802.11p-Draft 1.0 as the baseline for continued development in 802.11p.”

Moved by Broady.  
Seconded by Justin.

Discussion:

Bryan asked whether this means that we could only make changes according to the comments. Harry: The whole draft is open.

Dick: Do we have to go through each comment or do we have an obligation to accommodate the comments?

Harry: You have no obligation by rules. On the other hand it is important that we go through the comments to make sure that the comments don't show up the next time. We need to resolve as many comments as possible. This can be addressed by groupings.

Wayne: We are already going through the process of comment resolution.

Any discussion? No

Any objection to call the question? No

Favour: 17  
Against: 0  
Abstain: 2  
Motion passed.

Liaison reports:

ISO (WG16): Dick: ISO WG16 had a meeting in Philadelphia in May. Bill Jones gave a briefing at this meeting addressing the status and the prototyping effort. Europeans are still waiting and expecting to use IEEE 802.11p. (Initiative called CALM, 802.11p = CALM M5). They are developing architecture and draft documents are available upon request. The 60GHz standard is approved.

Any updates on spectrum allocation in Europe. No update. A group TG37 is working on this and at the moment it is not clear what the spectrum is that ETSI will allocate. They are expecting 40 MHz and maybe not contiguous.

What is the relationship between CAL M and car-to-car. Car-to-car consortium is fully apprised of CALM. Car-to-car is looking for spectrum and the infrastructure. Both groups have different requirements. Car-to-car is also waiting for the results of this amendment. However they wont wait forever.

Daniel: Car-to-car is not like the VIIC. This consortium is a place were different projects and car companies come together. Not attached to a particular project as the VIIC. Car-to-car is using both 802.11p and 1609.

Dick: The status of the prototypes. About 75M Euros has been allocated. They are planning to have a system up and running in Italy, England, and Spain. They are currently implementing CALM in Software. They are expecting to have it up and running somewhere next year.

IEEE 1609: Tom: doc nr. 06/978r0

Wayne provided a review of the ad-hoc meeting results. The resolution of the comments were addressed, clause 20 (Bob, Carl), the proposed language prepared by Justin.

Justin started a discussion on 06/0890r3.

Justin identified that the language may go beyond the motion and as a result, a new motion will be generated.

Capability information field:

Question: Will the new Element being mandatory? Only when you want to implement the WAVE action frame.

Question: Is the WAVE Element (WSI) defined in this document? Justin: Not yet, this is open for discussion. At the moment it is intended to be used by the SME. It is a field similar as the SSID, which is also set by a higher layer.

Question: Dave: Not synchronizing will cause problems. Justin: We may be talking about a different kind of synchronization. At the moment the 802.11p TSF synchronization is used for power saving. Not supporting this will result in not being able to use power saving as understood by 802.11.

Bryan requested that we added clarification on how the requirement will be used. Justin: This is indicated in section 10. Dick: This is a reaffirmation that we are having a TSF timer. No additional information is required.

Motion: Move to accept the proposed changes to clause 5, 7, 9, 10, and 11 of baseline draft P802.11p-Draft Dq.0 as presented in document 11-06-0890-03-000p and instruct the task group editor to make the changes to Clause 5, 7, 9, 10, and 11 with the appropriate formatting.

Moved: Justin McNew  
Seconded: Doug Kavner

Any discussion on the motion:

Bryan: Point of clarification. Harry: The document was placed on the server and an editorial change was made. It does meet the 4 hour rule and it is not a violation.

Bryan: Two points: 1) relative to 7.4.7.1 RSSI Field, 2) Local TSF Timer being required. Both were not sufficiently addressed. If the membership feels that this is required, they can vote no, also an action is generated.

Further discussion? No

Any objection to call the question? No. Question calls.

Motion states:

“Move to accept the proposed changes to clause 5, 7, 9, 10, and 11 of baseline draft P802.11p-Draft Dq.0 as presented in document 11-06-0890-03-000p and instruct the task group editor to make the changes to Clause 5, 7, 9, 10, and 11 with the appropriate formatting.”

Moved: Justin McNew  
Second: Doug Kavner

Favour: 13  
Against: 1  
Abstain: 4

Technical Motion: 75%. Motion passed.

Carl proposed to move Clause 20 to the end.

Broady: Move to move the Clause 20 discussion to the end of the presentation section.

Moved: Broady  
Second: Carl

Discussion: Justin. Clause 20 is lengthy and it is the most important thing that we need to do this week. Dick supports this.

Further discussion? No

Any objection to call the question? No

Favour: 6  
Against: 8  
Abstain: 3

Procedural motion; 50%. Motion failed.

Session was recessed 10:00 AM till 10:30 AM.

## **Tuesday, July 18, 2006, 10:30 AM Session**

Harry opened the session at 10:30 AM.

Any objections to move Bryan’s presentation up one slot? No

Any objections to move Guillermo's presentation up to the top of the agenda? No

Agenda was changed.

Mr. Acosta presented the presentation on channel modelling doc nr. 06/1017r2.

Bryan wells proceeded with doc nr. 06/1005r0.

The use of congestion control was being discussed. The discussion focussed on the location of congestion control either in the MAC layer or in the upper layer. No decision was made.

It was suggested that we would check with .11k and .11d on whether they have this functionality already included or whether we can extend the functionality of these amendments.

Motion: Move to accept the proposed MAC MCC Framework and request corresponding standards text to be drafted and submit as TGp resolution to comments 101, 928, 956, 1009, 1029, 1131, 1201, 1207, 1217, and 1278, submitted against P802.11p D1.0 (LB81).

Discussion?

Justin: Against the motion. As it is not easier for the task group to incorporate this.

Dick: Agreed with Justin. Also, additional research needs to happen to sync with .11k and .11d.

Lothar: Already one measurement discussed, which is on the server. We need to look into what can be reused from .11k, .11d.

Dick: What is the impact of adopting the framework. Bryan: We are not committed to the language that will be drafted for the framework.

Objection to call the question? No.

Question called.

Moved: Bryan Wells

Seconded: Lothar Stibor

Favour: 2

Against: 9

Abstain: 11

Procedural motion; 50%. Motion failed.

Dick asked for a straw poll on whether we would like to get some get and set controls and discuss that with .11k and .11d. Agreed that we need to have a discussion. No action taken.

Carl Kain proceeded with doc nr. 06/1038/r0 addressing clause 20.

Meeting was recessed at 12:30 PM.

### **Wednesday, July 19, 2006, 8:00 AM Session**

The agenda was presented and approved by unanimous consent. This was moved by Wayne and seconded by Rick.

Wayne and Carl proceeded with the discussion on clause 17 and 20 (doc nr. 06-1038-00-000p-tgp-comment-resolution-cl20-to-cl17.doc).

Broady clarified the use of the channels as it was specified in the FCC rules. He also discussed the use of the channels with a 10Mhz bandwidth and with a 20Mhz bandwidth.

Carl called for a straw poll: "Should any references to 20 MHz channel restrictions in the USA be put into Annex I?"

Yes: 22

No: 0

Harry called for a straw poll: "Who wants the polarization of the antenna in this standard?"

Yes: 5

No: 10

Harry called for a straw poll: "If it was in the standard, would you put it in annex I or in clause 17?"

Yes on I: 12

Yes on 17: 0

Motion: "Move to instruct the editor to remove all mention of physical attributes of antennas and their location, including polarization, from the TGP draft."

Discussion on the motion?

Broady: This would remove the 50 Ohm from the 802.11 standard. Harry: This is not the case.

Further discussion? No

Objection to call the question? No. Question called.

Moved: Dick Roy

Seconded: Bryan Wells

Favour: 7

Against: 7

Abstain: 5

Technical motion (75%). Motion failed.

Motion: "Move to instruct the editor to move the references to the polarization to annex I."

Discussion on the motion?

Carl: Emphasizes that it is part of the FCC rules and therefore annex I is the appropriate place.

Objection to call the question? No. Question called.

Moved: Broady

Seconded: Jerry

Favour: 10

Against: 2

Abstain: 4

Technical motion (75%). Motion passed.

Move to have Task Group p teleconferences beginning (Thursday) August 3<sup>rd</sup>, 2006 at (2PM Eastern) and continue through the second week after the September 2006 IEEE 802.11 session.

Move: Bryan Wells  
Second: Dick Roy  
Any discussion? No

Favour: 17  
Against: 0  
Abstain: 0  
Motion passed.

Plan for next meeting: Continue discussions and resolve comments.

Motion: "Move to delete annex P from the TGp draft."

Move: Jusint Mcnew  
Second: Broady Cash  
Any discussion?

Bryan: Motion was made at the May meeting and it failed. This was verified with the May minutes.

Lothar: Against as it is not appropriate to delete an annex to resolve comments.

Justin: This should be discussed with other task groups before adding it to .11p.

Objection to call the question. No

Favour: 8  
Against: 2  
Abstain: 6  
Technical motion (75%). Motion passed.

Harry closed the meeting at 10AM.

Action items:

ACTION: Identify the impact deleting the Capability Information Field (Justin)

ACTION: Address the WAVE Information Field and the Local TSF Timer. (Justin)

ACTION: Study .11k and .11d to check what functionality can be used for WAVE.

**IEEE P802.11  
Wireless LANs**

**TGr Meeting Minutes July 2006 Session**

Date: 2006-07-21

**Author(s):**

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Monday June 17, 2006

4:00 pm

- Call to order
- Review IEEE 802 policies and procedures for Intellectual Property.
  - The IEEE owns the copyright for all submissions at these meetings.
  - Chair asked for information on any Patents or Patent Applications that are applicable to the subject discussed during this meeting – None were given.
- Review operating rules for a Task Group.
- Attendance reminder.
- Approve minutes from the May session – document 11-06/683r1
  - Minutes are approved unanimously.
- Approve minutes from the Teleconference sessions – document 11-06/818r4
  - Minutes are approved unanimously.
- Approve minutes from the TGr June Adhoc meeting – document 11-06/850r0
  - Minutes are approved unanimously.
- Agenda – document 11-06/1000r1
  - Any changes to the agenda will be posted in document 11-06/1000r2
  - There are issues with document 11-06/903r0 as the content is dependent on document 11-06/814r1 and document 11-06/815r1.
- The motions document is posted as 11-06/992r0
  - Any changes to the agenda will be posted in document 11-06/992r1
- Discussion of document 11-06/730r0 by Kapil Sood
  - This document has to do with the text describing usage of the “more bit” for Fast Transition.
  - This is Technical Issue 41, a motion on document 11-06/730r0 failed at the last meeting.
  - This motion was on the server during the last meeting, so it meets the 4 hour rule.
  - We had a discussion at the last meeting regarding this issue.

**MOTION at 4:34pm: Instruct the editor to accept proposed resolution from the commenter for comment #208 and #1431, as documented in 11-06/537r11.**

**By: Kapil Sood**

**Second: Nancy Cam-Winget**

**Discussion:**

- One of the comments is no longer valid because the text has been removed from the draft.
- Clause 9 contains text regarding the “more data bit”.
- This motion does not include the change references in the PICS. Because of this, the text resulting from this motion will make the draft inconsistent.
- The comments are still valid and we should vote on these resolution.
- There are concerns as to the value of this feature. It adds additional complexity to the protocol and does not give any additional benefits.
- This motion does not remove the feature completely.
- The “more bit” feature is optional on the AP and optional on the STA. If it is difficult or complex to implement, then it does not have to be implemented.
- This feature provides a mechanism to minimize dropped packets.
- This “more data bit” is already implemented in power-save states.

- To effectively make use of this feature in non power-save states, the system would have to look deep into the network to determine whether there are packets destined for the STA.
- We only have to address packets queued at Access Points; we do not have to address packets queued deeper in the network.
- If you only look into packets queued at the Access Point, this feature is not useful.
- There could be up to 8 packets queued on the AP at any one time. There is no simulation data to support this feature.
- When this feature was introduced, the mover admitted that the feature is only useful for TCP/IP traffic.

Result: Yes – 3; No – 6; Abstain – 7. Motion fails.

- Discussion on document 11-06/948r0 by Michael Montemurro
  - This submission is based on the discussion of the Security Architecture from the ad-hoc meeting.
  - This text provides normative text on the TGr security architecture.
  - The PTK Key Holder is identified by the BSSID. We should use BSSID as the PTK Key Holder in the text.
  - The scenario for key revocation needs to be documented in this text.
  - What is the mechanism for revoking keys?
  - We should propagate that key lifetime along with the key, and the party receiving the key context would be responsible for key revocation.
  - We would not specify how keys are revoked when a STA creates a new PMK-R0 SA while there is an active PMK-R0 SA.
  - The case where a new key hierarchy obsoletes the old ones is already documented in the draft..
  - Key Holders are currently 16 octets in draft – this document suggests 6 octets for R1KH and R0KH requires 48 octets. – A submission needs to be changed to change the length of these new lengths.
  - We could use R0KH ID to be a hash of the NASID. This is not correct since the name that the R0Key Holder presents to the STA should be the same name as the R0Key Holder presents to the STA.
  - Using the R1Key Holder ID as a MAC address can make it unusable for 3-party protocols.
  - If there is a router then the MAC address is not visible. So, proposal of the commentor was to change R1KH to be the NAS ID.
  - The R1KeyHolder ID (in this case a MAC) is presented to the R0KeyHolder as well as the STA. This is valid for a security protocol.
  - So, MAC address is the “identity” that is sent to the STAs and the R0KeyHolder. However it may not be used to transport protocol messages.
  - The headings on clause 8.5A.6 needed to be cleaned up in this submission.
  - What else needs to be changed as 8.5A? Nothing was stated.
  - No need to show that both the key holders are part of SME. This should be updated in a diagram.
  - The diagram in clause 5 is sufficient to show that the key holders are part of the SME.
- Discussion on submissions to a Task Group draft:

- The abstract of the submission should include the comment ID's that are addressed.
- We should make this a policy for future TGr comment resolutions.
- Motions based on adhoc and teleconference work:

MOTION at 5:33pm: Accept all Editorial and Technical resolutions to LB82 comments, as agreed at the TGr ad-hoc meeting in June 2006, as highlighted in yellow and marked as part of Group #10 in 11-06-0537-20-000r-d2-comments.xls.

By: Bill Marshall

Second: David Hunter

Discussion:

- None.

Result: Yes – 14; No – 0; Abstain – 4. Motion passes.

MOTION at 5:35pm: Accept the submission contained in document 11-06-0819-01-000r-d2-1-checkup.xls, and instruct the editor to incorporate the changes into the draft and comment resolution spreadsheet.

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- None.

Result: Yes – 11; No – 0; Abstain – 7. Motion passes.

MOTION at 5:40pm: Accept the proposed change to comments #1261, 1264, and #1385 contained in document 11-06-0537-20-000r-d2-comments.xls, and instruct the editor to incorporate the changes into the draft.

By: Michael Montemurro

Second: Bill Marshall

Discussion:

- We had already defined a reserve/commit mechanism in Draft 1.0 that addressed provisional resources. We removed that text as a result of comment resolution on Draft 1.0.
- This comment adds reserve/commit mechanism back into the draft.
- The resolutions to these comments re-affirm our decision on reserve/commit for resource reservation.

Result: Yes – 6; No – 1; Abstain – 15. Motion passes.

- The motion concerning of document 11-06/173r2 was accepted in an earlier motion.
  - It was decided at the adhoc meeting to include this document into the blanket motions.
- Discussion on holding an August adhoc meeting:
  - Toronto would be a possible location for an adhoc meeting.
- Recess until Tuesday at 8:00am.

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Tuesday June 18, 2006

8:00 am

- Call to order
- Attendance reminder
- The updated agenda is document 11-06/1000r2
- Discussion of document 11-06/832r1 by Dorothy Stanley
  - Pre-authentication works through the current AP over the DS.
  - Pre-authentication is a mechanism described by IEEE 802.11i.
  - Pre-authentication is specified for EAPoL messages only.
  - The protocol for resource reservation and pre-authentication should be specified using the same mechanism. The entire security context and the resource reservation should be coupled.
  - Pre-authentication and resource reservation are both important to TGr, but they don't have to be tightly coupled.
  - Based on this text, there is no distinction between the IEEE 802.11i pre-authentication and IEEE 802.11r pre-authentication.
  - With this text, the security properties are changed because the MSK could be used for either IEEE 802.11i or IEEE 802.11r.
  - There is no ability for the STA to indicate the AKM selection in this protocol. So the MSK could be used for either IEEE 802.11i or IEEE 802.11r.
  - The AKM selection would occur when the STA associates with the pre-authenticated AP.
  - With pre-authentication in IEEE 802.11r, the STA has not contacted the R0 key holder. This needs to be done for IEEE 802.11r.
  - The STA needs to signal whether it is doing an IEEE 802.11r or IEEE 802.11i during the pre-authentication exchange.
  - The IEEE 802.11 AKM is independent of the IEEE 802.1X exchange.
  - The RADIUS server establishes the security context between the AP and the STA.
  - If the STA is moving from one mobility domain to another, then the STA has to do a full re-authentication with the new mobility domain.
  - The target PMK-R0 holder needs to know that the pre-authentication sequence is generating a new key.
  - There needs to be some handshake that signals the new R0 key holder to use the new R0 key.
  - There needs to be context for the MSK when it is generated.
  - There's no usage bound to the MSK when it gets established. The entire context is driven by the STA.
  - The first message of the FT initial association sets the context for the TGr keys between the STA and the AP. This pre-authentication mechanism does not give any context between the STA and the target AP.
  - If the STA has a key that is used for IEEE 802.11r and tries to use it for IEEE 802.11i, there is a problem. In this case the MSK has never been used.
  - If you do an IEEE 802.11i pre-authentication sequence, you generate a PMKSA. If you do an IEEE 802.11r pre-authentication sequence, you need to generate a PMK-R0 SA.
  - If we were to do something like this, more text would be required to allow the MSK to be cached for the Initial Association.

- There are some IETF drafts that allow the EAP method to provide specific information on IEEE 802.11r binding.
  - Establishing keys without context is a bad idea because it allows keys to be used for purposes that they were not intended.
  - Something in the pre-authentication protocol needs to be changed to signal whether IEEE 802.11i or IEEE 802.11r keys are being generated.
  - In IEEE 802.11i, the STA asserts the PMK by using the PMKID. There is no mechanism in TGr to do this.
  - The Initial Association for IEEE 802.11r assumes a certain order of operations. There needs to be an assertion that pre-authentication has occurred.
  - There's no need to identify another PMK-R0 because there is only one.
  - There is no text to say whether the MSK can be cached or not cached.
- Discussion of document 11-06/814r1 by Michael Montemurro
    - Figure 154U does not need to be changed

**MOTION at 9:04 am: Accept the submission contained in document 11-06-0814r1, and instruct the editor to incorporate the changes into the draft and comment resolution spreadsheet.**

**By: Michael Montemurro**

**Second: Kapil Sood**

**Discussion:**

- None.

**Result: Yes – 15; No – 0; Abstain – 5. Motion passes.**

- Discussion of document 11-06/815r1 by Michael Montemurro
  - It is still possible for the STA to offer TSPEC's in order.
  - In the case, the STA needs to order the TSPEC's from least desirable to most desirable.
  - This submission increases the processing on the AP.
  - The AP must process all the TSPEC's in any case.
  - There are other programmatic mechanisms for the AP's to minimize TSPEC processing.
  - The issues discussed here are implementation specific.
  - It's up to the AP to implement TSPEC processing efficiently
  - The only mechanism to provide TSPEC options is to use the same TSID. They would be constructed in reverse order of processing.
  - Each RDIE is a logical operation. The processing of each RDIE is atomic.
  - There is not much to be gained by the complexity of the existing RDIE processing.
  - If multiple TSPEC options are required, they should be added in TGe, not TGr.
  - There still can be multiple TSPEC's presented in each resource request.
  - We are leveraging the properties of TSPEC processing.
  - QoS resources can be over-written at any time by the STA.

**MOTION at 9:25 am: Accept the submission contained in document 11-06-0815r1, and instruct the editor to incorporate the changes into the draft and comment resolution spreadsheet.**

**By: Michael Montemurro**

**Second: Kapil Sood**

**Discussion:**

- None.

**Result: Yes – 7; No – 3; Abstain – 7. Motion fails.**

- Discussion on the protocol to revoke keys
  - There is a MLME-delete key primitive to delete the PTKSA.
  - The offending text no longer exists in the draft.
  - In document 11-06/948r0, there was a requirement that when the lifetime expires, the keys should be deleted.
  - From a TGr specification point of view, the only time keys are revoked is when the key hierarchy expires.
  - The text in the draft 2.1 has been removed.
  - We should be explicit about key revocation in the case of the expiry of keys. We should state the key lifetime in clause 8.5A.1.
  - The suggested mechanism by using the delete key primitives should be sufficient within the TGr PAR.
  - The PMK-R0 would revoke its PMK-R0 SA and revoke all PMK-R1 SA's. We decided that the only mechanism specified in TGr would be when the key lifetime expires.
  - The keys would be revoked based on the key lifetime.
  - The MLME-DeleteKeys primitive would be used to revoke the keys.
  - There isn't really a key revocation mechanism for IEEE 802.11i.
  - The MLME interface is between the SME and the MAC layer. The only keys that could be deleted are the PTKSA. All the keys reside within the RSN Key Management.
  - A MIB variable is not specific enough to define a specific key. However this would require that the key be named.
  - We've defined a key revocation procedure based on key lifetime.
  - There are two cases for deleting keys: key lifetime, and a deliberate key revocation.
  - We can define the key lifetime scenario, but we can't enumerate the other conditions.
  - We should be clear that the protocol we have does not provide key distribution and key revocation. We should clearly indicate how keys are deleted and when they expire.
  - There is no reason for a deletion requirement. It is inappropriate for us to define a mechanism for revoking keys.
  - There needs to be a key revocation description and key revocation mechanism. There are three scenarios:
    - To force a re-association.
    - To force resource allocation.
    - After a transition to another AP.
  - If we attempt to define a true revocation protocol, there's no guarantee that the keys will actually be deleted.
  - We will meet the PAR if we provide mechanisms to address this function. The policy enforcement mechanisms should be left to higher layer protocols.
  - There are already existing protocols to force resource allocation without revoking keys.
  - Keys must be revoked across the network. The deletion of PMK-R1's should be synchronized.
  - We should explicitly state that we don't have a key revocation protocol.
  - We specify the protocol requirements for key transfer, not the protocol itself.
  - This TGr draft is incomplete.
  - WiMAX uses a network protocol to distribute keys. However WiMAX is not an IEEE 802.16 standards body; the definition of this type of network protocol is beyond the scope of TGr.

Tuesday July 18, 2006

10:30 am

- Call to order
- Discussion on comment 1149, Digital Cache
  - It seemed at the last meeting that the task group wasn't any interest in doing work on this topic.
  - There is no alternative reservation scheme.
  - There was an interest in providing a reservation scheme because AP's took too long to process TSPEC's.
  - There is no text to justify reservations.
  - There was a point in IEEE 802.11i where vendors need to provide processing data in order to determine whether the TSPEC cipher was sufficient.
  - This comment could go to ExComm as a rejected comment.
  - We should reject this comment because we do not accept this proposed resolution.
  - There is no resolution to this comment.
- Discussion on document 11-06/685r0
  - This submission deals with adding a resource query mechanism to IEEE 802.11r.
  - This submission addresss LB comments regarding query for both comment 1195 and 1237.
  - After the key calculations and key derivations, there is one round trip to do a resource query. However, the query would introduce an additional round trip to actually reserve the resources.

**MOTION at 10:56 am:** Accept the submission contained in document 11-06-0685-00-000r-resource-query-procedures.doc, and instruct the editor to incorporate the changes into the draft.

**By:** Bill Marshall

**Second:** Rajneesh Kumar.

**Discussion:**

- This concerns that this motion addresses are edge cases.
- This addresses a problem with IEEE 802.11e, not IEEE 802.11r.
- From an operator perspective, you could have both EDCA and HCCA co-existent.
- Ideally, this should be indicated in a capability bit in the Beacon and Probe Response frames.
- Having HCCA and EDCA co-existent is not a valid deployment scenario.
- There could be used in a case where TSPEC would not be allowed because of an AP policy. No examples have been given.
- If the policies are out-of-synch, then all calls would be rejected.

**Result:** Yes – 1; No – 10; Abstain – 10. Motion fails.

- Discussion on document 11-06/1035r0 by Bill Marshall
  - There was some discussion to pull the PSK from the R0 level to the R1 level. The benefit to this mechanism is that the same mechanism could be used for WPA-Personal without key distribution.
  - The PSK goes in the same spot as the MSK. You could assert the PSK at the top of the key hierarchy and include the Anonce in the Initial Association.

- This effectively means that a PSK needs to be provisioned at each PMK-R0 in the Mobility Domain.
  - In the cases that use PSK, there would likely only be a single R0 Key Holder.
  - It's simple to use the PSK at the same level at the MSK.
  - You could change "BSSID" to "R0KeyHolder" in the first bullet of slide 4.
  - There are some notes in the draft already that issue warnings on the use of PSK.
  - If we name "BSSID" to "R1KeyHolder", then we don't require R1 keys.
  - The PSK deployment for IEEE 802.11r would not scale for PSK. Regardless of where you put it, there is a configuration issue.
  - In the case of a small office or larger home, the PSK should be configured at the R0KeyHolder.
  - The current mechanism will provide a unique key per BSSID regardless if it is provisioned at the R0KeyHolder or the R1KeyHolder.
  - We should strive for minimum complexity for all the procedures.
  - We should state that the MIC be checked prior to resource reservations.
  - We are not introducing a threat by not specifying that the MIC be checked prior to resource reservations.
  - This is more of an implementation issue and it doesn't affect interoperability. Therefore we should not add the MIC threat.
- Discussion on the ANonce
    - At the adhoc meeting, we discussed removing the ANonce from the PMK-R0 derivation.
    - We need to go back through the security goals in order to decide what needs to be in the key derivation.
    - We also have to state in the draft to state that a STA cannot have multiple key hierarchies for a single R0KeyHolder.
    - We need text in the draft to state that a STA can only have one instance of the key hierarchy.
  - Discussion of document 11-06/903r1 by Michael Montemurro
    - The last paragraph of the submission should be deleted.
    - The document will be revised and voted on during the Wednesday session.
  - Discussion of document 11-06/961r0 by Frank Ciotti
    - None.

**MOTION at 12:06pm: Accept the submission contained in document 11-06-0948-01, and instruct the editor to incorporate the changes into the draft.**

**By: Frank Ciotti**

**Second: Bill Marshall**

**Discussion:**

- None.

**Result: Yes – 13; No – 0; Abstain – 6. Motion passes.**

- We include PMK-R1Name in messages 3 and 4 to verify that we have the right key.
- Recess until Wednesday at 1:30pm.

Wednesday July 19, 2006

1:30 pm

- Call to order
- The agenda document is 11-06/1000r4
- Discussion on document 11-06/1035r1 by Bill Marshall
  - This document was discussed yesterday and updated based on the discussion.

**MOTION at 1:43pm: Accept the submission contained in document 11-06-1035r1, and instruct the editor to incorporate the changes into the draft.**

**By: Bill Marshall**

**Second: Michael Montemurro**

**Discussion:**

- None.

**Result: Yes – 8; No – 0; Abstain – 1. Motion passes.**

- Discussion on document 11-06/903r2 by Michael Montemurro
  - This document was discussed yesterday and updated based on the discussion.
  - The RRIE IE will be removed in table number 26 in clause 7.3.2.
  - The ability to change a reservation between the FT-Confirm/ACK and reassociation request/response was previously removed, so there is no need for the RRIE.

**MOTION at 1:52pm: Accept the submission contained in document 11-06-903r2, and instruct the editor to incorporate the changes into the draft.**

**By: Michael Montemurro**

**Second: Bill Marshall**

**Discussion:**

- None.

**Result: Yes – 9; No – 0; Abstain – 2. Motion passes.**

- Discussion on document 11-06/948r1 by Michael Montemurro
  - This document was discussed on Monday and updated based on the discussion.
  - In clause 8.5A.6.1, the reference to “TGr” should be “FT”. This would be considered an editorial change.

**MOTION at 2:02pm: Accept the submission contained in document 11-06-948r1, and instruct the editor to incorporate the changes into the draft.**

**By: Michael Montemurro**

**Second: Bill Marshall**

**Discussion:**

- None.

**Result: Yes – 13; No – 0; Abstain – 3. Motion passes.**

- Discussion on document 11-06/832r1 by Dorothy Stanley.
  - This update introduces two EAPoL-Key frames that are exchanged over the DS using the pre-authentication Ethertype.
  - The association request will include a PMK-R0Name in the RSN IE to signal that the STA has pre-authenticated.

- Today the R0Name has an ANonce. That would have to be included in this submission.
- From a TGr goals point of view, this doesn't meet the TGr criteria for Fast Transition.
- This pre-authentication is between mobility domains. It does not need to meet the requirements of a FT.
- This presentation has to do with an optional feature in TGr.
- This is a feature based on the Mobility Domain concept.
- TGr's PAR defines fast transition in an ESS.
- There are providers that have many access points. They all advertise the same SSID. In that case, it makes sense to separate the AP's into different mobility domains.
- If this is going to be a mechanism for transition across mobility domains, we should add a new definition and create a reachability domain.
- There is a requirement to make pre-authentication work for TGr. The network should be configured to allow pre-authentication to work.
- If reachability can be removed, then we should remove Mobility Domain from TGr.
- The concept of Mobility Domain is similar to paging groups in a cellular network.
- This submission addresses a letter ballot comment that calls for pre-authentication.
- The Mobility Domain concept is useful. It allows AP's in the infrastructure to be grouped to support Fast Transition.
- The purpose of the Mobility Domain is reachability. This pre-authentication scheme does not guarantee reachability.
- The more paging groups you have in a cellular network, the more signaling you have. The more mobility domains you have, the more signaling you have.
- The mobility domains limit the key scope. For large networks, Mobility Domain gives you the ability to restrict the area covered by a single RADIUS server.
- There will be a motion based on this submission in the 4:00 pm session.
- There is currently no explicit re-transmission for EAPoL-key messages. However there is re-transmission for EAPoL frames.
- There will need to be a timeout for EAPoL-key frames for pre-authentication.
- If the first EAPoL-Key is lost, the Authenticator would generate a PMKSA which would be never used.
- If the STA never receives the PMK-R0 ID, it will never attempt a FT Initial Association with the target AP.
- If the STA established a pre-authentication with a target AP in the Mobility Domain, it could go to any AP in that same Mobility Domain to attempt Initial Association.
- There is a line in the specification that says that pre-authentication can only be used for EAPoL packets or EAPoL-Start packets.

### Harry Worstall has been appointed TGr Chair pro-tem

- Discussion on document 11-06/999r0 by Clint Chaplin
  - In this mechanism, IEEE 802.11i authentication or pre-authentication could be used.
  - Whatever information is available in the association request is also available in the tentative association request.
  - The protection mechanism only protects the "reassociation request".
  - There is linkage between this submission and the work in TGw. If accepted, it would have to be updated as TGw is updated.
  - This would work whether or not an RSN was configured. This would also work for PSK.

- The advantage of this is that it is “make before break”. This eliminates the need to define a new TGr key hierarchy. It uses the existing security as defined in IEEE 802.11i.
- This submission eliminates the need to define a key distribution protocol and a remote request broker.
- The functions in RRB are well defined. The key hierarchy and key distribution is a “hand wave”.
- TGr has taken two years to evolve from two proposals. This proposal could take too much time to fix.
- The “hand waves” are out of scope of the TGr draft. Perhaps the “hand waves” could be addressed by an external body.
- There are unknowns about this proposal, but it looks simpler than what we have today.
- This is something that appears to get us out of the issues we are addressing.
- This mechanism only works over-the-air.
- The messages that are defined under state 3A take place between the STA and the target AP.
- There is no specification for how the AP infrastructure updates the DS. It is out of scope of this proposal.
- If we are going to start from scratch, then we could start with this.
- The version contained in document 11-06/999r1 is an update to the TGr draft.

STRAW POLL: Which of the following options do you prefer?

- a) 11-06/990r0 – Rip and replace style
- b) 11-06/990r1 – Add in Make Before Break to existing TGr draft style
- c) Don’t consider “Make before break” at all.

Discussion:

- None.

Result: a – 7; b – 8; c – 7.

MOTION at 3:28 pm: Accept the submission contained in document 11-06-999r1, and instruct the editor to incorporate the changes into the draft.

By: Clint Chaplin

Second: Henry Ptasinski

Discussion:

- This motion can be revisited in future meetings.
- We could remove remaining parts of the TGr draft in future meetings.
- This is an optional motion in TGr.

Result: Yes – 10; No – 7; Abstain – 4. Motion fails.

The chair has been returned to Clint Chaplin.

- Recess until the 4:00pm session.

Wednesday July 19, 2006

4:00 pm

- Call to order
- Comment resolution based on document 11-06/537r24
  - Any updates to the comment resolution will be posted in document 11-06/537r25
  - Comment 33, 47, 570, 834, 872, 873, 879 have been resolved.
  - Discussion on comment 891:
    - The proposed resolution is vague.
    - The suggested resolution in the comment was not specific.
    - This comment resolution attempts to address the fact that we need to do work to complete the security architecture for TGr.

MOTION at 4:30pm: Accept the proposed resolution to comment 891 as:

“Accepted. Figure 10 in 5.8 shows the architectural model, with 802.1X, SME, RSNA Key Management (contained completely within the SME), and the 802.1X-defined interface between the box labeled 802.1X and SME. RSNA Key Management contains (according to 3.130) the 4-way handshake. Text changes given in 11-06-1035-01 enumerate the additional Fast BSS Transition procedures included in the RSNA Key Management within the SME.”

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- We have defined new security management entities and they are not mapped in any detail. The figure needs to be updated to reflect that.
- If the commentor wanted specific information in the draft to address this comment, the commentor should have provided that in a proposed comment resolution.
- There was an understanding at the adhoc meeting to accept a security architecture. That has not been done now.
- Submission 11-06/948r1 brought agreements from the adhoc meeting into the draft.

Result: Yes – 6; No – 1; Abstain – 9. Motion passes.

- Discussion on comment 892:
  - The proposed resolution is vague.

MOTION at 5:05pm: Accept the proposed resolution to comment 892 as:

“Reject. This comment does not have a proposed resolution in sufficient detail in a legible form so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.”

By: Michael Montemurro

Second: Bill Marshall

Discussion:

- This and all motions regarding security architecture have not been addressed. There is no reason to address these comments now as a result of the security architecture.

- We are just throwing away a lot of work because we are trying to hurry to get to recirculation.
- The commentor should have taken the time to suggest proper resolutions to comments so that they can be addressed by the task group.
- We should take more time to resolve issues with the draft.
- We should not acknowledge comments that are not valid.
- We are not using “improper comments” as a way to reject comments.
- We have been spending lots of time trying to fix wording. We have not been doing any work to fix the draft.
- We’ve been dealing with these problems for six months and we have not seen any submissions to address them. This questions the importance of these questions.

#### CALL THE QUESTION

Result: Yes – 9; No – 3; Abstain – 4. Motion passes.

- Discussion on comment 913
  - Some of the comment is addressed in document 11-06/948r1.
  - The state machine work has been completed.
  - The end of the comment is a “rant”. This task group should not acknowledge this comment.
  - We have had 6 months work to create submission to address problems. However they do not exist.
  - The IEEE SA defines a process that we supposed to follow. This comment does not conform to the IEEE SA process.
  - If the commentor wants the comment resolved, then the commentor should be more specific about what they need in the draft.
  - There has been work done to go to the commentor and address the spirit of the comment. However the commentor has not co-operated to resolve the comment.

MOTION at 5:15pm: Accept the proposed resolution to comment 913 as:

“Reject. This comment does not have a proposed resolution in sufficient detail in a legible form so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.

By: Michael Montemurro

Second: Bill Marshall

Discussion:

- The chair should provide sufficient time to address this comment.
- The chair has given sufficient time to address the comment.

#### CALL THE QUESTION

Result: Yes – 10; No – 2; Abstain – 4. Motion passes.

- Discussion on comment 915
  - The text in document 11-06/948r1 describes the key holder normative requirements.

MOTION at 5:20pm: Accept the proposed resolution to comment 915 as:  
“Accept. Text changes given in document 11-06/948r1”

By: Michael Montemurro

Second: Chris Durand

Discussion:

- None.

Result: Yes – 11; No – 0; Abstain – 6. Motion passes.

- Discussion on comment 929
  - The text in document 11-06/948r1 states that the R0KeyHolder and the 802.1X Authenticator is co-resident.

MOTION at 5:25pm: Accept the proposed resolution to comment 929 as:  
“Accept. Text changes given in document 11-06/948r1”

By: Michael Montemurro

Second: Chris Durand

Discussion:

- This motion does not provide sufficient time to address this comment.
- This requirement has been specified in document 11-06/948r1.
- This comment does not talk about state machines. It is addressed in document 11-06/948r1.
- We need to do more work to address the security architecture of TGr.
- We can only vote on submissions that have been given to this task group.
- We have had 6 months to prepare submissions and none have been forth coming.
- The task group has an approved draft. The task group has an obligation to produce a standard expeditiously. Once consensus has been achieved the group has an obligation to produce a standard.
- The process has to move forward carrying forward rejecting comments.
- We have 14 unresolved comments.
- Participants in this task group have done a lot of work to create submissions to address comments.
- The group has worked to address comment resolutions. The group doesn't know whether the commentors accept resolutions until the result of a recirculation ballot.

Result: Yes – 8; No – 2; Abstain – 11. Motion passes.

- Discussion on comments 931 and 954
  - There is no term first level and second level key holders in the draft.
  - The terms first level and second level keys are informative. We should remove this informative text.
  - The “first level” and “second level” terms should not belong in the standard.
  - These terms are linked to R0 and R1 Key Holders and are addressed in document 11-06/948r1.

MOTION at 5:30pm: Accept the proposed resolution to comment 931 and 954 as:

Accept. Text changes given in document 11-06/948r1

By: Dorothy Stanley

Second: Rajneesh Kumar

Discussion:

- None.

Result: Yes – 10; No – 4; Abstain – 5. Motion fails.

- Dan Harkins voted no on this motion.
- Kapil Sood voted no on this motion.
- Christian Kuhtz voted no on this motion.
- Suman Sharma voted no on this motion.

MOTION at 5:40pm: Accept the proposed resolution to comment 931 and 954 as:

“Reject. This comment does not have a proposed resolution in sufficient detail in a legible form so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.”

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- None.

Result: Yes – 7; No – 4; Abstain – 9. Motion fails.

- Dan Harkins voted no on this motion.
- Kapil Sood voted no on this motion.
- Christian Kuhtz voted no on this motion.
- Suman Sharma voted no on this motion.
- At a previous TGr meeting, there was a discrepancy on who voted “No” on a motion. The motion was recalled and passed.
- Discussion on comments 978, 980, 987, 988, 1009, 1019, 1049, 1058, 1131, 1147, 1285

MOTION at 5:45 pm: Accept the proposed resolution to comments 978, 980, 987, 988, 1009, 1019, 1049, 1058, 1131, 1147, and 1285as:

“Accepted. Figure 10 in 5.8 shows the architectural model, with 802.1X, SME, RSNA Key Management (contained completely within the SME), and the 802.1X-defined interface between the box labeled 802.1X and SME. RSNA Key Management contains (according to 3.130) the 4-way handshake. Text changes given in 11-06-1035-01 enumerate the additional Fast BSS Transition procedures included in the RSNA Key Management within the SME.”

By: Bill Marshall

Second: Bob Miller

Discussion:

- Insufficient time has been spent to address these comments.
- There is sufficient text to show a high level model for the architecture. The IEEE 802.11i specification describes the same architecture.

CALL THE QUESTION: Objection.

Second: Bill Marshall

Result: Yes – 9; No – 1; Abstain – 8. The question is called.

Result: Yes – 8; No – 4; Abstain – 12. Motion fails.

- Dan Harkins voted no on this motion.
- Kapil Sood voted no on this motion.
- Christian Kutzt voted no on this motion.
- Suman Sharma voted no on this motion.
  
- Discussion of comment 1064
  - We have been waiting for months for a submission.
  - This comment does not instruct the task group on how to update the draft.

MOTION at 5:47pm: Accept the proposed resolution to comment 1064 as:

“Reject. This comment does not have a proposed resolution in sufficient detail in a legible form so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.”

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- This motion does not provide sufficient information to address this comment in the protocol.
- This topic has been discussed to address the comment.

Result: Yes – 19; No – 0; Abstain – 1. Motion passes.

- Discussion of comment 1096
  - There is not sufficient information to address this comment. The figures show the entities involved in the change.

MOTION at 5:50pm: Accept the proposed resolution to comment 1064 as:

“Reject. This comment does not have a proposed resolution in sufficient detail in a legible form so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.”

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- None.

Result: Yes – 10; No – 0; Abstain – 7. Motion passes.

- Discussion on document 11-06/832r2 by Dorothy Stanley

MOTION at 5:55 pm: Accept the submission contained in document 11-06-832r2, and instruct the editor to incorporate the changes into the draft.

By: Dorothy Stanley

Second: Kapil Sood

Discussion:

- There are changes that are required before this draft is accepted.

Result: Yes – 11; No – 7; Abstain – 2. Motion fails.

MOTION at 5:57 pm: Motion to request technical editor to create an updated IEEE 802.11r draft 2.2 incorporating all changes.

By: Bill Marshall

Second: Dorothy Stanley

Discussion:

- It would be beneficial to empower the technical editor to produce a new draft.

Result: Yes – 15; No – 2; Abstain – 2. Motion passes.

- Discussion on the comment resolution to 1149
  - This comment does not give sufficient information to update the draft.
  - By making reservations provisional we have addressed the comments.
  - Reservations are still in the draft and this comment has not been in the draft.

MOTION at 5:58pm: Accept the proposed resolution to comment 1064 as:

“Reject. This comment does not have a proposed resolution in sufficient detail in a legible form so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.”

By: Bill Marshall

Second: Kapil Sood

- This motion is on the floor and will be addressed when we call to order on Thursday.
- Recess until Thursday at 1:30pm.

Thursday July 20, 2006

1:30 pm

- Call to order
- TGr draft 2.2 has been posted.
- Comment resolution spreadsheet 11-06/537r25
- Continue with the motion on the table from Wednesday's session:

**MOTION at 1:37pm: Accept the proposed resolution to comment 1064 as:**

**“Reject. This comment does not have a proposed resolution in sufficient detail in a legible form so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.”**

**By: Bill Marshall**

**Second: Kapil Sood**

**Discussion:**

- None.

**Result: Yes – 9; No – 5; Abstain – 2. Motion fails.**

- Call for an alternate proposal.
- The commentors were given months to come up with a resolution and have not come up with anything.
- This is a volunteer organization and it takes time to come up with a resolution.
- The commentors have not explained the problem sufficiently to allow anyone to address the comment.
- The issue with reservation is that it is not authenticated.
- There has been a solution that has been proposed and it was rejected by the group. If the task group supports it, the commentors will go away and provide normative text.
- Making reservations provisional addressed these comments.
- The commentor would welcome a change to this comment resolution.

**POINT OF ORDER: This would be an entirely new motion if the chair recognizes it as a new motion.**

- The chair recognizes that this is a new motion.

**MOTION at 1:37pm: Accept the proposed resolution to comment 1064 as:**

**“Accept in principle: Addressed as the acceptance of comments 1261, 1264, and 1385.”**

**By: Bill Marshall**

**Second: Jesse Walker**

**Discussion:**

- This motion address the concerns because other resolutions.

**Result: Yes – 14; No – 0; Abstain – 1. Motion passes.**

- Discussion on comment 931:

- We have been through numerous motions and have wasted time when we could have been doing work.
- This motion is different from motion yesterday.

MOTION at 1:56pm: Accept the proposed resolution to comment 931:

“Accept. Text changes given in document 11-06/948r1”

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- We addressing part of the comment and the state machine to explain how the components work together.
- We need to decide what level of detail is required by the specification. The specification is at a high level to that components interoperate.
- Interoperability is dependent on the implementation.
- The diagram and the state machines would be normative text.
- The state machines would be normative text.
- State machines were required in IEEE 802.11i to discuss the security. The same work needs to be done for TGr.

Result: Yes – 7; No – 5; Abstain – 5. Motion fails.

- The people voting no on this motion have no resolution to the comment.

MOTION at 2:03pm: Accept the proposed resolution to comment 931 as:

“Reject. This comment does not have a proposed resolution in sufficient detail so that specific wording of the changes can be readily determined, thus the comment is not a valid negative comment as spelled out in the IEEE-SA Standards Board Operating Manual, "This vote must be accompanied by one or more specific objections with proposed resolution in sufficient detail in a legible form so that the specific wording of the changes that will cause the negative voter to change his or her vote to "approve" can readily be determined." Commenter is encouraged to resubmit the comment with a sufficiently detailed proposed resolution.”

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- We have been through numerous motions and have wasted time when we could have been doing work.
- This motion is different from motion yesterday.

Result: Yes – 10; No – 5; Abstain – 6. Motion fails.

- Request to break up in an adhoc session so that groups could go away prepare submissions.
- After comments made yesterday that proposals up to now have been wordsmithing. It shows a lack of respect to request an adhoc session now.
- Discussion on adhoc session
  - Call for a sponsor for an adhoc. None was given.
    - Intel in Santa Clara
  - Fail to see why we need an adhoc session to meet in adhoc mode.

MOTION at 2:16pm: Cancel the IEEE 802.11 TGr ad-hoc session originally scheduled for August 22-24, 2006.

By: Michael Montemurro

Second: Nobody came forward to second motion.

MOTION at 2:18pm: Hold the IEEE 802.11 TGr ad-hoc session in Santa Clara

By: Jesse Walker

Second: Kapil Sood

Discussion:

- None.

Result: Yes – 11; No – 2; Abstain – 10. Motion passes.

- Discussion on the October adhoc session.
  - The possibilities are October 10-12 or October 17-19.
  - The Australia meeting is the September 18-22.
  - October 17-19 allows the letter ballot to close

MOTION at 2:20 pm: Hold the IEEE 802.11 TGr ad-hoc meeting October 17-19, 2006

By: Jesse Walker

Second: Henry Ptasinski

Discussion:

- None.

Result: Yes – 19; No – 0; Abstain – 4. Motion passes.

- Discussion on teleconference meetings:

MOTION at 2:20 pm: Hold weekly IEEE 802.11 TGr telconferences for one hour duration starting August 2<sup>nd</sup> 2006, at 11:00 ET and continuing through the end of November 2006.

By: Jesse Walker

Second: Henry Ptasinski

Discussion:

- The right amount of time for these meetings seems to be either 15 minutes or 2 hours.
- We should request that these meetings be 2 hours.
- One hour should be sufficient.

Result: Yes – 16; No – 0; Abstain – 6. Motion passes.

- Discussion on the To-do list document 11-06/578r8
  - The results will be updated in document 11-06/578r9.
  - Document 11-06/948r1 contained text on revoking keys.
- TGr goes to adhoc mode until 3:15pm.
- Call to order.
- Report from the adhoc committee:
  - Still discussing the IEEE 802.11r security architecture.
  - The output of the adhoc group will be a state machine.
- Are there enough agenda items to warrant having the adhoc?
  - We will get more work done at the adhoc meeting than during the plenary session.
- Adjourn for the week.

## IEEE P802.11 Wireless LANs

### July 2006 Mesh Minutes

Date: 2006-07-20

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### Abstract

Minutes of the meeting of the IEEE 802.11 ESS Mesh Networking Task Group held at the Manchester Grand Hyatt Hotel in San Diego, CA, USA, on July 19<sup>th</sup> to 20<sup>th</sup>, 2006, under the TG Chairmanship of Donald Eastlake III of Motorola Laboratories. Minutes were taken by Stephen Rayment. The Minutes were reviewed and edited by Donald Eastlake III. The final Agenda for the meeting is in document number 11-06/0827r10. The Closing Report is in document 11-06/1126r0.

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## Minutes

### **Session I, Wednesday July 19<sup>th</sup>, 13:30-15:30, Grand Hyatt – Elizabeth D Room**

The session was called to order at 13:36 by Donald Eastlake III - Chair, Stephen Rayment - Recording Secretary.

The Chair reminded everyone to use the on-line automated attendance system.

The Agenda for this meeting is contained in document 11-06/827r7.

The Chair reviewed the IEEE 802 and 802.11 Policies and Procedures on Intellectual Property and Inappropriate Topics as shown in pg.7-9 of the Agenda. There were no responses from members regarding IPR or any patent or patent application of which the 802.11 working group Chair should be made aware.

The Chair made numerous Miscellaneous Announcements and reviewed the Anti-Trust Statement.

The Chair reviewed the Agenda for this meeting, per pg.14-19 of document 11-06/827r7. There were no objections to the Agenda, hence it was approved by unanimous consent.

The Minutes of the May 2006 Meeting 11-06/775r0 were approved by unanimous consent.

The Minutes of the Teleconferences;

31 May 2006, 11-06/831r0

28 June 2006, 11-06/877r0

12 July 2006, 11-06/924r1

Were approved by unanimous consent.

The Minutes of the June 2006 ad hoc meeting 11-06/849r0 were approved by unanimous consent.

The Minutes of the Monday, 17 July, ad hoc meeting 11-06/1062r0 were approved by unanimous consent.

The Chair then reviewed the TG Process using document 11-06/1028r0.

The Chair gave a brief update on status.

Motion to adopt the previously presented, straw polled but not yet adopted comment resolutions in the MAC Enhancement Area. [Exact wording is below.]

Moved: Juan-Carlos Zuniga Second: Dee Denteneer

The first part of the divided Motion reads as follows;

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “MAC Enhancement” Topic Group with status “Open” and Resolution “Accept”, “Counter”, or “Reject” except CID 28, 63, 64, 65, 69, 78, 80, 81, 219, 221, 223, 224, 226, 228 [June ad hoc straw poll 7-0-0]
- Adopt the comment resolution of CID 13 in 11-06/974r0 [Monday straw poll 16-0-0]
- Adopt the comment resolution of CID 105 in 11-06/899r0 [Monday straw poll 11-0-5]
- and direct the Technical Editor to incorporate them into the Draft.

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 23 Against: 0 Abstain: 3

Motion passes.

The second part of the divided Motion was then considered.

Motion to postpone until tomorrow.

Moved: Mathilde Beneviste Second: Dee Denteneer

For: 5 Against: 12 Abstain: 10

Motion to postpone fails.

The Chair then asked for unanimous consent to postpone until later in this session but there was objection.

Motion to adopt the resolution CIDs remaining in the second part of the split Motion, which reads as follows;

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “MAC Enhancement” Topic Group with status “Open” and Resolution “Accept”, “Counter”, or “Reject” numbered CID 63, 64, 65, 78, 80, 81 [June ad hoc straw poll 7-0-0]
- Adopt the comment resolution of CID 72 (reject) in 11-06/974r0 [Monday straw poll 10-1-6]
- and direct the Technical Editor to incorporate them into the Draft.

Moved: Juan-Carlos Zuniga Second: Dee Denteneer

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 26 Against: 0 Abstain: 8

Motion passes.

Motion to adopt previously presented submissions in the RFI area, which reads...

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “RFI” Topic Group with status “Open” and Resolution “Accept”, “Counter”, or “Reject” [June ad hoc straw poll 7-0-0]
- and direct the Technical Editor to incorporate them into the Draft.

Moved: Guido Hiertz Second: Guenael Strutt

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 22 Against: 0 Abstain: 11

Motion passes

Motion to adopt previously presented submissions in the General/Other area, which reads as follows;

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “General/Frame Formats/Mesh Framework/Mesh Layer Management” Topic Groups with status “Open” and Resolution “Accept”, “Counter”, or “Reject” [June ad hoc straw poll 7-0-0] and
- Adopt the comment resolution of CIDs 37 and 53 in 11-06/839r1 [Monday straw poll 11-0-5]
- and direct the Technical Editor to incorporate them into the Draft.

Moved: Dennis Baker Second: Steven Conner

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 23 Against: 0 Abstain: 7

Motion passes.

Steven Conner presented documents 11-06/844r4 and 11-06/1064r1 which proposed a purely editorial restructuring of the current D0.02 draft resolving CIDs 140, 196, 197, 200, 201, and 202.

Motion to adopt the document structure changes in 11-06/1064r1 and direct the Editor to incorporate into the Draft.

Moved: Steven Conner Second: Jan Kruys

For: 32 Against: 0 Abstain: 9

Motion passes (only majority required since not technical content affecting)

Presentation “MP Capability Field Backward Compatibility”, Steven Conner, 11-06/1072r0

Moved to adopt this submission and direct the Editor to incorporate its changes into the Draft.

Moved: Steven Conner Second: Guido Hiertz

For: 28 Against: 0 Abstain: 5

Motion passes.

The Chair recessed the session at 15:25PM

## **Session II, Thursday July 20<sup>th</sup>, 10:30-12:30, Grand Hyatt – Elizabeth AB Room**

The Chair convened the session at 10:30AM.

The Chair reviewed the Agenda for the day’s sessions using document 11-06/827r8.

The Chair reminded all to use the On-Line Attendance system.

Presentation “Mesh Security Proposal”, Jesse Walker etal, 11-06/1089r0

Summarizes material in documents 11-06/1088 and “Clause 11A.5 - Security”, Jesse Walker etal, 11-06/1001

Move to instruct the Editor to incorporate 11-06/1088r0 into the TGs draft

Moved: Jesse Walker Second: Steven Conner

Suggestion this should be a strawpoll but mover requested a vote.

For: 16 Against: 9 Abstain: 25

Motion fails since  $\frac{3}{4}$  in favor required.

Presentation “Comminus”, Dan Harkins, Christian Kutzt, 11-06/883r0 was deferred due to lack of time

Presentation “Extension to 6-Address Scheme for TGs Mesh”, Joseph Kim etal, 11-06/841r1

The group ran out of time before this presentation could be discussed, although there were members in attendance who wished to comment on it, so, without objection, the agenda was modified to allow it to be discussed at the beginning of the next session.

The Chair recessed the session at 12:32

## **Session III, Thursday July 20<sup>th</sup>, 16:00-18:00, Grand Hyatt – Elizabeth AB Room**

The Chair convened the session at 16:02

The Chair reviewed the Agenda in document 11-06/827r8

The Chair reviewed the status to date and reminded all to use the on-line attendance system.

There were no comments on the “Extension to 6-Address Scheme for TGs Mesh”, 11-06/841r1 document apparently because those who wished to comment on it had discussed their concerns with the author in the interim.

#### Straw Poll

Shall we accept the 6-address scheme and prepare texts based on it for approval during the September TGs meeting?

For: 33 Against: 5 Abstain: 7

The Chair reviewed the process forward, again using document 11-06/1028r1, specifically focusing on next steps.

The Chair explained that his intended procedure was to vote between the two options for activity between this meeting and the next as show in submission 11-05/1028r1, then do a yes/no/abstain vote on the option selected and if that vote has a majority in favor, proceed to work out any further details. There was no objection to following this procedure.

#### Vote on Two Options

- Option A: Six weekly teleconferences on Wednesday Aug 2<sup>nd</sup> through Sept 6<sup>th</sup>.
- Option B: Ad hoc meeting ~Aug 29-31, teleconferences Wednesday Aug 2<sup>nd</sup>, Aug 16<sup>th</sup>, and Sept 6<sup>th</sup>.

Option A: 20 Option B: 6

Option A was selected

Vote on adopting option A: Yes: 36 No: 0 Abstain: 1

In the past, TGs teleconferences have been at 11:00 or 17:00 Eastern Time. A member suggested 17:00 for these calls. There were no objections to continuing to have the teleconfs at 17:00 EDT.

At the suggestion of the Chair, without objection, the maximum duration for the calls was agreed to be 90 minutes.

Purpose of the teleconfs is for refining the Draft.

Document 11-06/1028r1 included a list of those who have volunteered to co-ordinate creation of submissions to improve the Draft and resolve comments.

Moved to direct the Technical Editor to produce a D0.03 incorporating the changes approved at this meeting.

Moved: Malik Audeh Second: Jan Kruys

For: 36 Against: 0 Abstain: 1

Motion passes.

Presentation “Secure Mesh Formation”, Dan Harkins, Christian Kuhtz, 11-06/1092r1

Moved to instruct the Editor to incorporate the text from document 11-06/883r0 into the TGs draft

Moved: Dan Harkins Second: Christian Kuhtz

For: 5 Against: 8 Abstain: 25

Presentation “Interworking Considerations”, Jan Kruys, 11-06/1091r0

Presentation “Lightweight Mesh Point - A Confusing Term”, Guido Hiertz, 11-06/1036r4  
Move to instruct the IEEE 802.11s Editor to adopt the changes to P802.11s/D0.02 provided in submission “11-06-1103-02-000s-clarification-ieee-802-11s-entity-classes.doc”.  
Moved: Guido Hiertz Second: Juan-Carlos Zuniga  
For: 31 Against: 1 Abstain: 4  
Motion passes

Presentation “Backward-compatibility and virtual carrier sense in mesh networks”, Mathilde Benveniste, 11-06/1058r1

The end of session time arrived before discussion was complete or the motion in this submission could be considered.

The Chair adjourned the session *sine die* at 18:02

## Detailed Record

### **Session I, Wednesday July 19<sup>th</sup>, 13:30-15:30, Grand Hyatt – Elizabeth D Room**

The session was called to order at 13:36 by Donald Eastlake III - Chair, Stephen Rayment - Recording Secretary.

The Chair reminded everyone to use the on-line automated attendance system.

The Agenda for this meeting is contained in document 11-06/827r7.

The Chair reviewed the IEEE 802 and 802.11 Policies and Procedures on Intellectual Property and Inappropriate Topics as shown in pg.7-9 of the Agenda. There were no responses from members regarding IPR or any patent or patent application of which the 802.11 working group Chair should be made aware.

The Chair made numerous Miscellaneous Announcements and reviewed the Anti-Trust Statement.

The Chair reviewed the Agenda for this meeting, per pg.14-19 of document 11-06/827r7. There were no objections to the Agenda, hence it was approved by unanimous consent.

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12 July 2006, 11-06/924r1

Were approved by unanimous consent.

The Minutes of the June 2006 ad hoc meeting 11-06/849r0 were approved by unanimous consent.

The Minutes of the Monday, 17 July, ad hoc meeting 11-06/1062r0 were approved by unanimous consent.

The Chair then reviewed the TG Process using document 11-06/1028r0. This included the 3 Cycles of Comments and Resolution on pg. 5. It was suggested that more than one cycle of Informal Call for Comments leads to rapidly diminishing returns. You can not really get a broader base of comments from the entire Working Group without going to Working Group Letter Ballot. The Projected Schedule was shown on pg.6, showing Sponsor Ballot in July 2007. The flow of events in the process and activities before and for the next meeting were described on pg.7-9.

The Chair gave a brief update on status. 43% of comments were resolved at the May meeting. Tentatively another 16% were resolved at the June meeting. Some more were resolved on Monday.

Motion to adopt the previously presented, straw polled but not yet adopted comment resolutions in the MAC Enhancement Area. [Exact wording is below.]

Moved: Juan-Carlos Zuniga Second: Dee Denteneer

Question – can any items be removed from the list? The Chair responded that the question can be divided to split out any independent comment resolution and can be amended to deleted one or more comment resolutions.

The Chair explained the rationale behind the groupings into the three motions for the different topic areas.

Request were made to remove a number of CIDs from consideration so the motion was divided into a first part with all of the non-controversial CIDs and a second part with all the CIDs for which removal or any special treatment had been requested.

The first part of the divided Motion reads as follows;

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “MAC Enhancement” Topic Group with status “Open” and Resolution “Accept”, “Counter”, or “Reject” except CID 28, 63, 64, 65, 69, 78, 80, 81, 219, 221, 223, 224, 226, 228 [June ad hoc straw poll 7-0-0]
- Adopt the comment resolution of CID 13 in 11-06/974r0 [Monday straw poll 16-0-0]
- Adopt the comment resolution of CID 105 in 11-06/899r0 [Monday straw poll 11-0-5]
- and direct the Technical Editor to incorporate them into the Draft.

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 23 Against: 0 Abstain: 3

Motion passes.

The second part of the divided Motion was then considered.

A request was made to amend the Motion by removing CIDs 28, 219, 221 and 228 because an informal group had developed alternative resolution wording which it wished to suggest. By unanimous agreement, the Motion was amended to delete them.

It was also requested to amend the Motion by deleting CIDs 223, 224 and 226 from the Motion so that further work could be done on them. By unanimous consent, they were deleted.

It was noted that CID 69 should not have been included because its resolution is listed as “defer”. Without objection, it was removed.

A member indicated they had two presentations related to the resolutions CIDs 63, 64, 65, 69, 78, 80 and 81 but had had problems uploading the submissions to 802wirelessworld and requested that consideration of ratifying the comment resolutions for these CIDs be deferred until the next day. The Chair asked for unanimous consent but there was objection. This request was then treated as a

Motion to postpone until tomorrow.

Moved: Mathilde Beneviste Second: Dee Denteneer

For: 5 Against: 12 Abstain: 10

Motion to postpone fails.

The Chair then asked for unanimous consent to postpone until later in this session but there was objection.

Motion to adopt the resolution CIDs remaining in the second part of the split Motion, which reads as follows;

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “MAC Enhancement” Topic Group with status “Open” and Resolution “Accept”, “Counter”, or “Reject” numbered CID 63, 64, 65, 78, 80, 81 [June ad hoc straw poll 7-0-0]
- Adopt the comment resolution of CID 72 (reject) in 11-06/974r0 [Monday straw poll 10-1-6]
- and direct the Technical Editor to incorporate them into the Draft.

Moved: Juan-Carlos Zuniga Second: Dee Denteneer

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 26 Against: 0 Abstain: 8

Motion passes.

Motion to adopt previously presented submissions in the RFI area, which reads...

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “RFI” Topic Group with status “Open” and Resolution “Accept”, “Counter”, or “Reject” [June ad hoc straw poll 7-0-0]
- and direct the Technical Editor to incorporate them into the Draft.

Moved: Guido Hiertz Second: Guenael Strutt

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 22 Against: 0 Abstain: 11

Motion passes

Motion to adopt previously presented submissions in the General/Other area, which reads as follows;

- Moved to
- Adopt the comment resolutions in 11-06/602r14 in the “General/Frame Formats/Mesh Framework/Mesh Layer Management ” Topic Groups with status “Open” and Resolution “Accept”, “Counter”, or “Reject” [June ad hoc straw poll 7-0-0] and
- Adopt the comment resolution of CIDs 37 and 53 in 11-06/839r1 [Monday straw poll 11-0-5]
- and direct the Technical Editor to incorporate them into the Draft.

Moved: Dennis Baker Second: Steven Conner

The Chair called for debate or any requests to split out CIDs from this motion. There were none so the Task Group proceeded to a vote ( $\frac{3}{4}$  in favor being required for adoption).

For: 23 Against: 0 Abstain: 7

Motion passes.

Comments/Questions;

- When can you move to reconsider?  
Anyone who voted on the prevailing side can move to reconsider the same or following day. This only takes a majority and brings the business back before the body again.
- What about at the next meeting (September in this case)?  
This meeting doesn't bind the next. You could make new motions to change or reverse any action made here at a subsequent meeting unless something irrevocable has happened. For example, you can make further changes in a part of the Draft that was changed here unless it has been sent out for Working Group Letter Ballot or the like.

Steven Conner presented documents 11-06/844r4 and 11-06/1064r1 which proposed a purely editorial restructuring of the current D0.02 draft resolving CIDs 140, 196, 197, 200, 201, and 202.

Motion to adopt the document structure changes in 11-06/1064r1 and direct the Editor to incorporate into the Draft.

Moved: Steven Conner Second: Jan Kruids

Comments/Questions;

- What means 11A?  
From IEEE Style Guide – any new section being inserted is numbered by suffixing a letter to the number of the chapter just before where it is being inserted. Since MAC functions go through section 11 in the current standard and PHY stuff starts at 12, 11A seemed like the right designation for our amendment.
- HWMP and OLSR are not at same level any more?  
The IEEE Style guide also limits you to a maximum of five levels. Our current Draft far exceeds that in some sections, mostly the sections concerning HWMP and OLSR. The way things are currently

structured, you would have only 3 levels left to describe them – not enough without, at a minimum, extensive re-writing.

- HWMP and OLSR are same level as 11A.2

Yes, instead of having them inside 11A.2, now 11A.2 is just framework, protocols leverage framework

- If a motion that modified the Draft is considered tomorrow, after this motion renumbers the sections it refers to, what are effects?

Mover: As long as they don't conflict, it's OK

Chair: Changes to the Draft are in submissions which are time stamped as to when they were uploaded so you could always figure it out based on that.

For: 32 Against: 0 Abstain: 9

Motion passes (only majority required since not technical content affecting)

Presentation “MP Capability Field Backward Compatibility”, Steven Conner, 11-06/1072r0

Moved to adopt this submission and direct the Editor to incorporate its changes into the Draft.

Moved: Steven Conner Second: Guido Hiertz

Comments/Questions;

- Can implementers just check one field – ie. not worry about IBSS bit?

Yes, Windows Zero Config uses ESS bit, but it's not a complete implementation

For: 28 Against: 0 Abstain: 5

Motion passes.

The Chair recessed the session at 15:25PM

## **Session II, Thursday July 20<sup>th</sup>, 10:30-12:30, Grand Hyatt – Elizabeth AB Room**

The Chair convened the session at 10:30AM.

The Chair reviewed the Agenda for the day's sessions using document 11-06/827r8.

The Chair reminded all to use the On-Line Attendance system.

Presentation “Mesh Security Proposal”, Jesse Walker etal, 11-06/1089r0

Summarizes material in documents 11-06/1088 and “Clause 11A.5 - Security”, Jesse Walker etal, 11-06/1001

Comments/Questions;

- Slide 15 – AS Reachability true means you want to be an authenticator?

Yes – also asserts you can perform the function

- If false, may be an authenticator, why not just use MAC address?

In that case neither one can reach global AS, AS is logical, often first look local, here can't do global, still want to enable authentication, establish small local database when there's no connectivity or in IBSS mode

If one of the devices has nothing in database, authentication fails, just like normal

- Role selection – when AS true on both sides – is it possible to use just a MAC address?

Yes. Don't want user to have to get involved though!

- What if higher MAC address is 4 hops away from the AS and the lower MAC address only 2?

You could have a more complex way to determine who is authenticator and who is supplicant, but we wanted to go with the simplest thing we could think of that would work.

- Is there scope for multiple associations?  
Yes – see reworked section on Link Establishment. Want to recover from situation when one uses state and the other doesn't.
- If node loses link to another node are there procedures to minimize authentication re-establish time?  
Not directly addressed. 802.11i has mechanisms, key-caching, not sure if they need optimization for mesh. 802.11r doesn't seem to have any mesh applicability.
- Role based authorizations – ruled out securing of protocols – any provisions for future?  
Not directly addressed, no hooks, not necessary, if using 802.1x delivery of auths is part of protocol. There is a model in 802.1x
- Slide 19 – message 2 supplicant doesn't know exchange is live – is that a concern?  
Unless using a counter (secure?) is a part of all key management protocols. Liveness only to AP. Maybe add text clarifying how to implement 4-way. Didn't get into 802.11i. Changes such that Auth and Supp must commit to their nonce values have been suggested.
- Send GTK1 in message 4? Could send 3 again?  
Doesn't work because connection is secure by then and insecure message 3 would be rejected as a forger.
- Clause 11A5.1 – does management include joining as well as state  
Yes. Want to enable joining, if not sure of role, have to authenticate as either.
- Routing protocol security?  
In May the group agreed to limit security for TGs to transport and AP security. May have some new material to present at a later meeting on routing security.
- State authentication – MP may not be Portal, where is AAA Client  
Doesn't talk about IETF protocols, AAA client will always be on some device, Server can be anywhere.
- Practical problem – if AS in mesh and must be reached, EAP assumes co-located  
Yes, needs study. Regardless need credentials or won't work.
- Role negotiation – supplicant is one who is directly authenticated  
802.11i says it is mutual, if not there's no guarantee! Didn't want to assume cost of 2 authenticators – also the 2 would have to be cryptographically linked.
- If you run EAP mutually authenticating – do you need channel binding to fix?  
Yes – but market says its satisfactory without.
- Scalability – number of authentications compared to non mesh  
Layer 3 outside scope. AS is logical, doesn't need to be RADIUS, can be simple just a Root Key.

Move to instruct the Editor to incorporate 11-06/1088r0 into the TGs draft

Moved: Jesse Walker Second: Steven Conner

Suggestion this should be a strawpoll but mover requested a vote.

For: 16 Against: 9 Abstain: 25

Motion fails since  $\frac{3}{4}$  in favor required.

Presentation “Comminus”, Dan Harkins, Christian Kutzt, 11-06/883r0 was deferred due to lack of time

Presentation “Extension to 6-Address Scheme for TGs Mesh”, Joseph Kim et al, 11-06/841r1

The group ran out of time before this presentation could be discussed, although there were members in attendance who wished to comment on it, so, without objection, the agenda was modified to allow it to be discussed at the beginning of the next session.

The Chair recessed the session at 12:32

## **Session III, Thursday July 20<sup>th</sup>, 16:00-18:00, Grand Hyatt – Elizabeth AB Room**

The Chair convened the session at 16:02

The Chair reviewed the Agenda in document 11-06/827r8

The Chair reviewed the status to date and reminded all to use the on-line attendance system.

There were no comments on the “Extension to 6-Address Scheme for TGs Mesh”, 11-06/841r1 document apparently because those who wished to comment on it had discussed their concerns with the author in the interim.

Straw Poll

Shall we accept the 6-address scheme and prepare texts based on it for approval during the September TGs meeting?

For: 33 Against: 5 Abstain: 7

The Chair reviewed the process forward, again using document 11-06/1028r1, specifically focusing on next steps.

Comments/Questions;

- MAC section has no need for an ad hoc between this meeting and the September meeting although one may be advisable later when in Working Group Letter Ballot
- Substantial improvements happened at last ad hoc face to face, we have many other topics to cover, eg. 6 address, architecture, entities. So there should be an ad hoc before the September meeting.
- An ad hoc just doing comment review is not very inclusive, doesn't do justice to TG. It would be OK to have an ad hoc to work on submission development.

The Chair explained that his intended procedure was to vote between the two options for activity between this meeting and the next as show in submission 11-05/1028r1, then do a yes/no/abstain vote on the option selected and if that vote has a majority in favor, proceed to work out any further details. There was no objection to following this procedure.

Vote on Two Options

- Option A: Six weekly teleconferences on Wednesday Aug 2<sup>nd</sup> through Sept 6<sup>th</sup>.
- Option B: Ad hoc meeting ~Aug 29-31, teleconferences Wednesday Aug 2<sup>nd</sup>, Aug 16<sup>th</sup>, and Sept 6<sup>th</sup>.

Option A: 20 Option B: 6

Option A was selected

Vote on adopting option A: Yes: 36 No: 0 Abstain: 1

In the past, TGs teleconferences have been at 11:00 or 17:00 Eastern Time. A member suggested 17:00 for these calls. There were no objections to continuing to have the teleconfs at 17:00 EDT.

At the suggestion of the Chair, without objection, the maximum duration for the calls was agreed to be 90 minutes.

Purpose of the teleconfs is for refining the Draft.

Document 11-06/1028r1 included a list of those who have volunteered to co-ordinate creation of submissions to improve the Draft and resolve comments.

Moved to direct the Technical Editor to produce a D0.03 incorporating the changes approved at this meeting.

Moved: Malik Audeh Second: Jan Kruys

There were no discussions

For: 36 Against: 0 Abstain: 1

Motion passes.

Presentation “Secure Mesh Formation”, Dan Harkins, Christian Kuhtz, 11-06/1092r1

Comments/Questions;

- Will you propose to replace 802.11i?  
No, this is only for mesh formation
- How secure is certificate?  
Not, assigned by trusted third party
- So certificate requires third party?  
Yes, but not protocol
- Don't need third with certificate or PSK
- Peer to peer model good for mesh – how do you do authorization?  
This doesn't give authorization, could do 802.1x after for that
- This does authentication not authorization, validation that this can be part of the mesh?  
Yes
- Authentication is implicit like 802.11i, grant possession of session key
- Processing time – 5sec?  
See Applied Cryptography. Some open source in 10's of msec. 30-40M instructions
- NIST Suite B algorithms use elliptic curve, enable secret and top secret at lower cost
- How does this work in the mobile situation when links change?  
Keep key when link goes down, bound to BSSID
- What is lifetime of keys, refresh?  
Refresh anytime you do another exchange. How strong the key is, one factor in its lifetime, depends on which Diffie-Hillman group you are using
- This is link by link, when mesh security should be end to end?  
Maybe. This is just trying to solve the mesh formation problem
- What do you use without this?  
See beginning of presentation – eg. if no access to AS, will fail, also addresses problems with PSK mode, which people want.
- If one node is compromised is the whole mesh?  
If doing PSK, yes.  
Impersonated AP can create links but can't decrypt traffic  
If an MP does this, a centralized AS won't help.
- Again - not addressing authorization

Moved to instruct the Editor to incorporate the text from document 11-06/883r0 into the TGs draft

Moved: Dan Harkins Second: Christian Kuhtz

For: 5 Against: 8 Abstain: 25

Presentation “Interworking Considerations”, Jan Kruys, 11-06/1091r0

Comments/Questions;

- If two portals configured, 2-3 hops become 8-9 hop networks
- If root configured all nodes will send packets to MP2
- All nodes in slide 3 should have same portal
- Option 3 makes security problem more tractable – this way mesh can't attack external LAN
- Assumes BPDU flow through the mesh – in an rBridge scheme they don't. rBridge is currently under development in the IETF.  
We have to rely on current protocols  
Providers could use this if they chose

- Request to get more info from IETF

There was a presentation to TGs and a Tutorial to the WG. Pointers to these will be posted to the TGs mailing list.

Presentation “Lightweight Mesh Point - A Confusing Term”, Guido Hiertz, 11-06/1036r4

The presentation outlined changes proposed in document “Clarification of IEEE 802.11s entity classes”, Guido Hiertz et al, 11-06/1103r2

Move to instruct the IEEE 802.11s Editor to adopt the changes to P802.11s/D0.02 provided in submission “11-06-1103-02-000s-clarification-ieee-802-11s-entity-classes.doc”.

Comments/Questions;

- Compare NFMP (Non-Forwarding Mesh Point) and LWMP (Light Weight Mesh Point)?  
NFMP is a subset of MP – it wouldn’t forward on its own, but may ask others. LWMP never asks other devices to forward
- How can NFMP function without interworking?  
Can choose neighbour to forward for it
- This document just clarifies, it identifies but doesn’t solve all issues, should not be normative, so it is proposed as an informational annex
- Slide 7, correct never uses 4-address scheme
- This is purely informative?  
Yes, want single understanding of terms
- Clarifies well, good tool, welcome others to contribute
- Will go in informative annex, will add more later

Moved: Guido Hiertz Second: Juan-Carlos Zuniga

For: 31 Against: 1 Abstain: 4

Motion passes

Presentation “Backward-compatibility and virtual carrier sense in mesh networks”, Mathilde Benveniste, 11-06/1058r1

Comments/Questions;

- CCF is designed for one radio, provides priority to the mesh, aggressive, collisions on access side are the cost
- PAR does not say we must be compatible with existing devices?
- TGn is dealing with issues of legacy, just as g did with b legacy  
Not politeness, reducing collisions, we have a co-existence group, aggressiveness here is not acceptable

The end of session time arrived before discussion was complete or the motion in this submission could be considered.

The Chair adjourned the session *sine die* at 18:02

**IEEE P802.11  
Wireless LANs**

**Meeting Minutes July 2006 Plenary**

Date: 2006-07-20

**Author(s):**

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**Abstract**

TGt meeting minutes from the July 2006 Plenary in San Diego, CA.

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Chair: Charles Wright  
Secretary: Marc Emmelmann & Larry Green

## **1. Tuesday Session AM-2 (2006-07-18, 10.30h – 12.30h)**

### **1.1. Meeting called to order by chair at 10.30h**

### **1.2. Review of the IEEE 802 and 802.11 policies & procedures**

Chair went through the policies and procedures.

The chair went through the patent ruling from PatCom.

The chair asked whether there were any patents or Letters Of Assurance that the WG chair needed to be aware of. There were none. The chair then notified the body that if they were aware of any such patents or LOAs, they should inform the WG chair.

### **1.3. Attendance Recording**

Chair points to new electrical attendance recording (use <http://newton>).

Don't use 802wirelessworld server for anything else besides retrieving DCNs and submitting documents.

### **1.4. Chair comments**

Meeting objectives presented by chair:

- Organize and begin comment resolution in the Internal Review
- Continue with (limited) technical presentations and proposals
- Progress report by chair

Draft D0.08 available

Two telecons held since Jacksonville meeting

A secretary guide is available (05/820r1). Protocol does not require to record each comment made during general discussion.

Chair points out the EC decision on the 4-hour rule. Chair will clarify by Wednesday morning if break / lunch hours count towards the 4-hour rule.

### **1.5. Call for Presentation**

Chair calls for presentations to include them in the tentative agenda.

### **1.6. Approval of Agenda (06/977r0)**

Discussion if comment resolution should have preference on voting new technical contributions into the draft. Conclusion: will multiplex time between comment resolution and new proposals, in light of restrictions imposed by the new 4-hour rule interpretation.

Time allocation:

- Wednesday AM1: New Proposals
- Wednesday PM1: Comment resolution

- Thursday AM1: Comment resolution
- Thursday AM2: New Proposals
- Standing Order Thursday PM2: Deferred votes changing technical contents of draft.

(M 1) Motion

Move to approve the agenda as shown in (06/977r0).

Motion *accepted* by unanimous consent.

## 1.7. Approval of meeting minutes

The following minutes are subject for approval:

- 11-06/810r1 – Jacksonville 802.11 Interim
- 11-06/847r0 – June 15 telcon

(M 2) Motion

Move to accept the Jacksonville minutes (11-06/810r1).

Motion *accepted* by unanimous consent.

(M 3) Motion

Move to accept the minutes of the June 15 telcon (11-06/847r0).

Motion *accepted* by unanimous consent.

## 1.8. Editors report

Editor reports on changes on draft since last meeting. Current version is 802.11.2-D0.08 as on the document server.

## 1.9. Comment resolution

Chair proposes process for comment resolution. Group arrives at consensus for process; this is to proceed linearly through the comments, starting with technical comments only, at Clause 4.

TG conducts first iteration through internal comment document (06/872r2) in the working group.

TG partially assigned comments to TG members for proposing a resolution as reflected in (06/872r3).

## 1.10. TGt in recess at 12.31h

## 2. Wednesday Session AM-1 (2006-07-19, 08.00h – 10.00h)

### 2.1. Chair calls TGt to order at 8.00h

### 2.2. 4-hour ruling on draft changing text

Regarding the ruling that text making technical changes to a draft has to be on the server for 4 session hours, the chair clarifies that

- the 4 hours have to be within the session time surrounded by the “red line” in the WG schedule, including breaks, lunch, and dinner.
- the ruling is not yet into effect
- it is at the discretion of the chair to discard this rule if a motion on a text that has been on the server for the required 4-hour rule incorporates minor technical changes with respect to the contribution

### 2.3. Royce Fernald: Video Performance 06/965r1

Discussion on how attenuation relates to video performance if specific codecs are not specified.

Comments that the test result, i.e. the “number” reported, should be comparable when reported for the baseline experiment.

Baseline configuration contains constraints that may not be fulfilled for all possible DUTs. Possible alternative: require to report along with the test result the configuration. The baseline configuration should only include settings that all DUTs for which this test applies has to be able to set.

**(M 4)** Motion (Technical 75%)

Move to instruct the editor to incorporate the contents of document 802.11-06/096r1 into the P802.11.2 draft.

Moved: R. Fernald

Seconded: F. Pirzada

Discussion on motion:

Sasha and Fanny speak in favor of motion. They feel the text is substantial to the draft.

Yes: 14

No: 0

Abstain: 2

Result: Motion passes.

### 2.4. Michael Foegelle: COAT Environment (06/760r1)

Discussion clarifies in what terms the presented environment differs from existing one in the draft and how existing tests benefit from it.

Michael points out that several comments submitted were resolved by this proposal. Discussion not finished.

### 2.5. TGT in recesses at 10.06h

## 3. Wednesday Session PM-2 (2006-07-19, 16.00h-18.00h)

### 3.1. Chair call meeting to order at 16.00h

### 3.2. Announcements by Chair

TGT got an additional meeting slot on Thursday AM-2 session 13.30 – 15.30.

### **3.3. N. Sharma: Proposal for resolution of editor's comments for P802.11.2-D0.8 (06/895r0)**

Discussion on proposed comment resolution is in favor to the followed approach simplifying the draft. Should be applied to other similar situations in the draft as well.

(M 5) Motion (Technical 75%)

Move to instruct the editor to incorporate the contents of document 06/895r0 into the P802.11.2 draft.

Moved: F. Pirzada                      2<sup>nd</sup>: L. Green

Discussion: No discussion.

Yes: 14                      No: 0                      Abstain: 5

Motion passes.

### **3.4. M. Forgelle: Supporting information for eliminating Section 5.7 "OTA Shielded Enclosure Environment" (06/1006r0)**

Discussion on implications of presented channel characteristics in different kinds of shielded rooms.

Discussion if section 5.7 should be removed or rather changed.

Editor points out that sections 5.7 and 5.2 may talk about orthogonal things but reference each other.

### **3.5. Resolution of comments from Internal Review**

Agreed actions to resolved comments are recorded in comment resolution sheet 06/872r4.

### **3.6. TGT recesses at 17.58h**

## **4. Thursday Session AM-1 (2006-07-20, 08.00 h– 10.00h)**

Recording secretary for this session: Larry Green

### **4.1 Chair called the meeting to order at 08:00h**

There were 18 attendees present.

### **4.2 Resolution of comments from Internal Review**

Agreed on actions to resolved comments recorded in comment resolution sheet 06/872r5.

### **4.3 Tom Alexander: RF Testing (05/1044r1)**

Tom Alexander presented 05/1044r1, contributed by Dennis Ward. Present TGT members indicated their willingness to accept to resolutions given therein. Tom Alexander proposed that the content be included as an Annex in the TGT Draft.

### **4.4 Resolution of comments from Internal Review**

Actions to resolved comments recorded in comment resolution sheet 06/872r5.

### **4.6 TGT recesses at 10:04h**

## **5. Thursday Session AM-2 (2006-07-20, 10.30h – 12.30h)**

### **5.1. Chair calls meeting to order at 10.32h**

There were 13 attendees present.

### **5.2. M. Foegelle: Supporting information for eliminating Section 5.7 "OTA Shielded Enclosure Environment" (06/1006r0 & 06/760r1)**

Continue on discussion of presentation delivered on Wednesday (Agenda Item 3.4).

Discussion of required level of expertise to set up such an environment. Concern about higher level of complexity of the proposed document. Counter: True, but by this lab engineers who are not deeply involved in RF testing could conduct test using this environment simply by following the presented steps.

Group aware of challenges involved in testing MIMO devices but no one has solutions so far.

Concerns: risen complexity even though existing constrains are already strict.

### **5.3. L. Green: Theoretical Throughput Limits (06/928r2)**

L. Greens points out that the technical contents of the documents was placed on the reflector July 15. The group was notified via the reflector.

Discusson:

State in the beginning that the calculation is only done for DCF.

A spreadsheet might be provided to accompany the draft.

**(M 6)** Motion (Technical 75%)

Move to instruct the editor to incorporate the contents of document 06/928r2 into the P802.11.2 draft.

Moved: L. Green                      2<sup>nd</sup>: A. Alimian

Discussion:

Agreement that this is not to define a "pass/fail" criteria for testing. It is just for information purposes to know the theoretical limit of a standard compliant device. Vender-specific implementations are explicitly not considered.

Yes: 11                      No: 0                      Abstain: 3

Motion passes.

### **5.4. P. Visuri: Addressing Multipath Fading in the TGT Draft (06/799r1)**

This presentation is in support of document 06/160r1 "Multipath Fading in OTA Tests"

Discussion whether or not make the turntable to stop for each measurement makes things more complicated. Different views: a) proposal is good but not ready for debate / inclusion b) strong support for inclusion.

Opinion that document needs further revision.

Editor states that “instructions to the editor” included in presentation (06/799r1) are sufficient.

### **5.5. Comments by Chair**

Chair asks that, in the future, now that the comment resolution spreadsheet exists and comment IDs have been assigned, that presentations should contain a list of all the comments (by ID number) the presentation proposes to resolve. This will make it very easy to mark the comments in the spreadsheet as resolved, if the proposal is accepted.

### **5.6. TGT recesses at 12.30h**

## **6. Thursday Session PM-1 (2006-07-20, 13.30h – 15.30h)**

Recording secretary for this session: Larry Green

### **6.1. Chair called the meeting to order at 13.40h**

There were 12 attendees present.

### **6.2. M. Fogelle: Phy Layer Link Budget Analysis (06/958r0)**

Discussion on how the presentation might fit into the TGT Draft. Section 4 seems most appropriate, but no motion will be made at this time. TRP and TIS metrics are influenced directly by this analysis.

### **6.3. M. Fogelle: TRP and TIS Performance Metrics (06/906r0)**

Discussion centered on how TRP and TIS affect 802.11 performance. The observation was made that TRP and TIS are secondary metrics. TRP and TIS are becoming increasingly important with the advent of converged devices that combine cellular and 802.11 technologies. TRP and TIS measurements are useful for compliance and certification tests. TRP and TIS tests increase complexity of testing, but may be required for converged device testing. No further action taken at this time.

### **6.4. N. Sharma: OTA Testing for MIMO Based Devices --- Run-to-Run Variations (06/0896r0)**

Noted that the lack of MIMO devices makes testing difficult. Available products do not comply with the emerging 802.11n Standard. More test results will be submitted in the future.

### **6.5. TGT recesses at 3.35h**

## **7. Thursday Session PM-2 (2006-07-20, 16.00h – 18.00h)**

### **7.1. Chair called the meeting to order at 16.00h**

There were 20 attendees present.

## 7.2. F. Pirzada: Proposal for Draft Framework Section (06/1112r0)

Audience appreciates work and results. Unanimous consent to include in draft which has to be voted on during the next meeting due to the 4-hour rule to place documents on the server.

## 7.3. TGT time-line

TGT Process Milestone left unchanged as agreed by the task group.

## 7.4. Standing Order: Pending Motions

(M 7) Motion (Technical 75%)

Move to instruct the editor to incorporate the resolutions of comments 7, 9, 10, 13, 14, 15, 17, 18, 19, 20, 23, 25, 26, 29, 30, 149, 228, 267, 281, 282 of document 802.11-06/0872r5 into the P802.11.2 draft.

Moved: S. Tolpin      2<sup>nd</sup>: L. Green

Discussion: No discussion

Yes: 9      No: 0      Abstain: 1

Motion passes.

## 7.5. Liaison to IETF

Tom Alexander presents 06/1102r0 BMWG Presentation.

It summarizes material submitted to IETF BMWG.

Discussion:

BMWG does specify metrics; thus it is hard to determine if there is an overlap with TGT.

If we take up the work, e.g. throughput tests which use IP, we only consider .11 devices. All other devices would be outside our scope.

Even though helpful, TGT cannot provide BMWG a draft until going to LB.

There are metrics in the TGT draft which were derived from IETF documents.

*STRAW POLL:*

*Is the scope of work described by 11-06/1102r0 within the TGT scope of work?*

*Yes: 0*

*No: 8*

*Need more information: 3*

*STRAW POLL:*

*Would TGT prefer to take up the work in this area?*

*Yes: 0*

*No: 9*

*Unknown at this time: 2*

*STRAW POLL:*



**IEEE P802.11  
Wireless LANs**

**TGu Minutes for July 2006 Session**

Date: 2006-07-21

**Author(s):**

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**Abstract**

Minutes for the TGu sessions of the IEEE 802.11 Plenary meeting during the week of 17<sup>th</sup> – 21<sup>st</sup> July 2006 at San Diego, CA, USA.

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## **Executive Summary:**

Documents discussed:

1. Latest Draft Requirement Document (05/822r11)
2. Down selection procedures (06/976r0)
3. Updated Timeline Document (06/701r3)
4. TGu Vision Document (06/550r0)
5. Six proposals were presented
  - a. Proposal for User Plane Cluster (06/988r0)
  - b. Proposal for SSPN Interface Cluster (06/278r3)
  - c. Proposal for Authentication Cluster (06/882r0)
  - d. Proposal for Emergency Service (06/1039r0)
  - e. Proposal for Network Selection Cluster (06/1014r2)
  - f. Proposal for MIH Support (06/1016r0)
6. One Technical Presentation
  - a. Announcing AN relative level (06/973r2)

11 motions were raised during the sessions. 10 have been voted on.

Motion 11 is on the table, and would be the first agenda item for September meeting.

Matthew Gast is elected as the Secretary (start from September meeting).

Two teleconference dates were suggested:

- 17th Aug 2006, Thu 10:00ET
- 6th Sep 2006, Wed 10:00ET

Chair: Stephen McCann

Secretary: Hong Cheng

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### **1. Monday Afternoon Session: (17<sup>th</sup> July 2006 1600 - 1800)**

#### **1.1 Meeting called to order by the chair at 16:04**

Chair reminded members of signing attendance.

#### **1.2 Review of the IEEE 802 and IEEE 802.11 policies & procedures (06/946r2)**

Chair went through the policies and procedures. Chair went through the patent ruling from PatCom (Patent Committee). Chair reminded members of copyright issue regarding the contributions.

#### **1.3 Approval of the May 2006 minutes (06/817r1)**

The minutes were approved by unanimous consent.

#### **1.4 Approval of Agenda (06/946r2)**

Comment: One technical contribution about network selection cluster is to be added to Tue afternoon session.

The amended agenda was approved by unanimous consent.

**1.5 Review of last meeting (06/800r0)**

The chair reviewed the activities of last TGu session during the May 2006 Interim meeting.

**1.6 Document Review**

The chair went through the latest TGu documents:

- 06/550r0 TGu vision document
- 05/822r11 TGu technical requirement document

**1.7 Review of IETF EAP netsel Draft:**

<http://www.ietf.org/internet-drafts/draft-ietf-eap-netsel-problem-04.txt>

Early version of the draft has been reviewed by TGu. Current draft is going through IETF Working Group Last Call.

Comment: It would be helpful to provide comments by Last Call deadline (end of July).

Stephen (Chair): A Liaison Letter is to be sent based on comments received from this meeting.

Comment: The reference to the TGu documents in the draft needs to be updated, since TGu has revised its documents.

**1.8 Down Selection Procedures (06/976r0)**

It is decided that for clusters having only one proposal, the vote will be carried out after presentation.

For clusters having more than one proposal, the vote will be carried out on Thursday.

**1.9 Approve of the decision from Ad Hoc meeting:**

Proposed Motion text:

Move that down selection voting on the MAC address anonymity requirement is postponed until more information is received from cellular organisations up to the next IEEE802 plenary.

- Note: This therefore guarantees that the requirement stays within TGu until the above specified date.

Comment: Suggest that the note be removed, since the group should not prevent anyone from raising a motion in the future, e.g. in September, to remove the requirement

**Motion 1: Move that down selection voting on the MAC address anonymity requirement is postponed until more information is received from cellular organisations up to the next IEEE802 plenary.**

**Moved by: Necati Canpolat**

**Seconded: Hong Cheng**

**Result (For-against-abstain): 8-1-0**

**Motion passed**

Proposed Motion text:

Move IEEE802.11u creates and then asks the IEEE802.11 WG to send a liaison letter to 3GPP SA3 asking for more information about their concerns with MAC address anonymity

Comment: Prefer to have a timeline for this task.

**Motion 2: Move IEEE802.11u creates and then asks the IEEE802.11 WG to send a liaison letter to 3GPP SA3 asking for more information about their concerns with MAC address anonymity, before the September 2006 meeting.**

**Moved by:** Sabine Demel  
**Seconded:** Necati Canpolat  
**Result:** The motion is approved by unanimous consent

**Motion 3:** Move IEEE802.11u creates and then asks the IEEE802.11 WG to send a liaison letter to TR41.4 and ETSI TISPAN informing them about the current IEEE802.11 emergency call activities (in both TGu and TGv) before the September 2006 meeting.

**Moved by:** Necati Canpolat  
**Seconded:** Patrick Mo  
**Result:** Motion is approved by unanimous consent

### **1.10 Merged Proposal for TGu User Plane Cluster (06/988r0) Hong Cheng**

Comment: Static mapping should be sufficient for a type of network.

Answer: In the background scenario, there could be multiple networks behind the AP, and they may use different QoS Mappings. The proposed mechanism is to allow AP to deliver the correct mapping information the STA.

Comment: Upper Layer could inform lower layer of the service type directly.

Answer: There is no standard way for the application layer to inform 802.11 MAC layer of such information other than using the 802.1D User Priority.

#### **Motion 4: User Plane Confirmation Vote**

**Move that IEEE802.11u approves document 11-06-0988r0 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document.**

**Moved by:** Hong Cheng  
**Seconded by:** Dave Stephenson  
**Result: (for-against-abstain): 17-0-4**  
**Motion passed.**

Session recessed.

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## **2. Tuesday Afternoon Session (18<sup>th</sup> July 2006 1330 - 1530)**

Meeting called to order at 1330.

### **2.11 IETF Draft review motion**

#### **Motion 5:**

**Move that IEEE802.11u creates and then asks the IEEE802.11 WG to send a liaison letter to IETF EAP regarding comments concerning: <http://www.ietf.org/internet-draft/draft-ietf-eap-netsel-problem-04.txt> before the end of the September 2006 meeting.**

**Moved by:** Farooq Bari  
**Seconded:** Tim Godfrey  
**Result (for-against-abstain): 13-0-0**  
**Motion passed**

Comment: The deadline for the review in IETF is end of July.

Comment: An email will be sent to the TGu mailing list to inform the WG of the liaison.

## **2.12 Proposal for TGu SSPN Interface Cluster (06/278r3) Hong Cheng**

Comment: The mention of “QSTA” in the proposal limits scope of the solution. There are currently technical comments in TGma to remove the words “QSTA”.

Answer: The proposal was developed against the current IEEE802.11 draft. In the draft development process, the proposal can be updated according to the status of the new IEEE802.11 standard (i.e. draft IEEE 802.11ma rev 7.0).

Comment: Would like to see the IE lists being normative, since an informative list can be ignored by vendors and does not serve the purpose.

### **Motion 6: SSPN Interface Confirmation Vote**

**Move that IEEE802.11u approves document 11-06-0278r3 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document.**

**Moved by: Hong Cheng**

**Seconded: Necati Canpolat**

**Result (For-against-abstain): 18-0-6**

**Motion passed.**

## **2.13 Proposal for TGu Authentication Cluster (06/881r0) Patrick Mo**

Document for the proposal text is 06/882r0.

Comment: How is the key management done with the single association (and multiple authentications)?

Answer: To be shown in the following presentation slides.

Comment: For every virtual link created, a different MAC address is used.

Answer: Yes. A temporary address is assigned to the virtual link.

Comment: The PTKs are bound to those addresses.

Comment: Is the MAC address random? How to guarantee the uniqueness of the address?

Answer: There could be a MAC address server in the DS to assign the MAC address.

Comment: The virtual links are created based on needs (instead of by default)?

Answer: Yes.

Comment: What does the container IE have to do with the Authentication cluster?

Answer: It is used to carry information from upper layer during the virtual link establishment.

Comment: Why multiple PTKs are needed between the same pair (STA & AP)?

Comment: Is the STA (with multiple virtual links) using one physical layer (instance)?

Answer: Yes.

Comment: Authentication is tied to the physical counters, and 11i would not work well in this case.

Comment: How many virtual links can be supported?

Answer: Not limited in the proposal.

Comment: Why multiple authentications need to be done, when the separation of traffic can be done at higher layer?

Answer: There are different credentials for different SSPNs.

Comment: The more reasonable scenario is to have virtual channels from the same SSPN. Scenario 1 mentioned in the proposal is over complicated.

Answer: Scenario 1 is for the case that two separate applications are activated.

Comment: If a SSPN sends a disassociation to the STA, would that also tear the other virtual links?

Answer: No. It would only tear the corresponding virtual link.

Comment: This separation can be achieved at higher layer. Why it needs to be done in L2?

Comment: If a STA can generate random MAC address per SSPN authentication, do you still need to create the virtual links? (It can be achieved by multiple associations)

Answer: Disadvantage of such method is outlined on slide 13.

Comment: What is the purpose to separate the traffic over the air interface, when there is only one physical link at the STA?

Comment: The proposal has major impacts on 802.11 state machines and other management procedures.

Comment: This requirement is an optional requirement.

Comment: In case a different BSSID is used for different STA, how is the multicast or broadcast done?

Answer: This could be discussed offline.

**Motion 7: Authentication Cluster Confirmation Vote:**

**Move that IEEE802.11u approves document 11-06-882r0 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document.**

**Moved by: Patrick Mo**

**Seconded by: Sabine Demel**

**Result (for-against-abstain): 1-17-8**

**Motion failed**

Comment: Needs more details to decide the impacts on the state machine.

Stephen: Step 9 of the down selection procedure will be carried out. The group would like to invite Patrick to come back in Sep meeting to present again.

Session recessed.

---

### **3. Tuesday afternoon session: (18<sup>th</sup> July 2006 1600 - 1800)**

Meeting called to order by the chair at 1600.

#### **3.14 Proposal for E911 Support (06/1039r0) Dave Stephenson**

Comment: What does the Emergency Service Only bit mean?

Answer: This bit is to identify to the STA that behind the walled garden there is only emergency service available.

Comment: Is it possible that there are other services in the walled garden?

Answer: At the moment, it is limited to emergency service. But it does not prevent local network from providing more services.

Comment: There are other ways to access emergency service, e.g. by using "Skype". Does ESO bit mean that those are not allowed?

Answer: It is up to the emergency service provider to decide if multiple methods should be deployed.

Comment: The pre-emption is only for the authenticated users (MLPP levels).

Answer: That will only affect the STA at state 3, when it is associated.

Comment: Any station (an attacker) can take the highest level.

Answer: AP will interpret the request. What policy AP applies on that is up to system administration, e.g. AP only allows up to 50% capacity for emergency service.

Comment: If the STA is already associated, it can directly use other methods, e.g. "Skype". This mechanism (in the proposal) is for the unassociated STA.

Comment: How does a system know that an authenticated user make use of the expedited request is actually accessing the emergency services?

Answer: Through setting the bandwidth use value to 0.

Comment: Still think it could be misused. Prefer some control at the AP side.

Answer: AP policy control could be done, but it out of scope of TGu

Comment: Agree that something at higher layer needs to be in place to make the check.

### **Motion 8: Individual Cluster (Emergency Call) Confirmation Vote**

**Move that IEEE802.11u approves document 11-06-1039r0 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document.**

**Moved by: Dave Stephenson**

**Seconded: Farooq Bari**

**Result (for-against-abstain): 13-0-10**

**Motion passed**

### **3.15 Technical presentation: Announcing AN relative Level (06/973r2) Amjad Soomro**

Comment: Who sets the priority?

Answer: How it is set is outside of the specification scope.

Comment: Prefer another name than "priority".

Comment: Is there an example of setting priorities of different SSPNs?

Comment: A fixed priority may not help user, since the user could make the choice based on application requirements (which is dynamic).

Answer: This only gives the information about the preference, and does not restrict the use of any other methods.

Comment: The information could be provided by IEEE802.21 IS service.

Answer: IEEE802.21 is not about MAC and PHY. It is about handover.

Comment: What does a priority level mean?

Answer: It is a relative level (to help STA making the choice).

Comment: If it can be mapped to service at AN, it would be more useful.

Comment: It sounds like a policy/profile issues.

Comment: STA may have been preconfigured with a ranking of the SSPN list

Answer: This assumption may not cover all the models for interworking. Other cases that there is no configured information should also be addressed.

Answer: The priority level gives the information in the AN's point of view in addition to the other information. For example, how to set IEEE802.11e AC CWmin, CWmax parameters is not specified in the standard.

Comment: Need to define how STA interprets the information to make it work.

Comment: The document number needs to be updated.

Stephen (Chair): What is the preferred mechanism for getting the partial proposals to the TGu draft?  
Comment: Motions could be raised when a baseline document is ready to insert the partial proposal.

Comment: Do we need to modify the flow chart for the down selection? The document is just for down selection. Another document is needed to specify procedures after down selection.

Stephen (Chair): Yes.

**Straw poll:**

**How many like the idea of priority and would like to include it in the draft:**

**Think it is a good idea: 4**

**Bad idea: 2**

Stephen (Chair): The group would like to invite Amjad back in Sep.

Comment: Would like to specify a window for accepting the partial proposal.

Stephen (Chair): It will be carried out until the Working Group LB.

### **3.16 Discussion of teleconference dates**

Two teleconference dates were proposed between this meeting and September Interim meeting:

- 17th Aug 2006, Thu 10:00ET

- 6th Sep 2006, Wed 10:00ET

Tentatively, some document about the draft will be provided by the editor by 1st Sep. for discussion in the second teleconference.

Two teleconference dates were proposed between the September Interim meeting and November Plenary meeting:

- 4th Oct 2006 10:00ET

- 2nd Nov 2006 10:00ET

An Ad Hoc meeting was suggested between September Interim meeting and November Plenary meeting:  
10 - 12th Oct 2006

The session is recessed.

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## **4. Thursday Afternoon Session: (20<sup>th</sup> July 2006 1330 -1530)**

Meeting called to order at 1334 by the chair.

### **4.17 Secretary Election**

One nomination for the Secretary position was received:

Matthew Gast

Matthew is accepted as Secretary by acclamation.

### **4.18 Proposal for TGu Network Selection Cluster (06/1014r2) Necati Canpolat**

Comment: A STA can only have one association at a time. So, for a STA to query another AP, it needs to break the current association.

Comment: It would be good to inform IEEE802.21 that TGu have the requirement for creating efficient query.

Comment: Should we have a liaison to formalise this?

Stephen (Chair): We need to have a 802.11 level Liaison Letter to do that. Best way forward would be having a joint session in Sep meeting to discuss it

Comment: IEEE802.21 already defined query mechanism.

Stephen (Chair): Would like to advice people to send the question to the Mailing List since it is not in the scope of this particular proposal. We can decide then if to have liaison or have joint session in Sep.

Comment: Does it mean that for the solution to work, IEEE802.21 is needed?

Answer: It is just providing a pass through for AP.

Comment: Who defines the IDs in the table (Table-u1)?

Answer: IEEE802.11 has a number assigning authority to define that.

Comment: 64 values are not enough. An extensible definition is preferred.

Comment: IEEE802.11 assigns number to be used by Task Groups, but not for external bodies

Comment: The protocol ID is 2 bytes. But it is not consistent in the document.

Answer: The text needs to be updated. Doc will be revised and uploaded.

Comment: Regarding comeback delay, would it be set to indefinite value to lock the STA out?

Answer: Since it is not protected, the (Higher Layer entities at the) STA may need to set certain policy to reject any out of scope value.

Comment: How the delay is known by the AP?

Answer: It is pre-configured at the AP. And, the STA can be set to come back again if the result is not ready when it comes back.

Comment: Is this delay value per channel, or per AP?

Answer: This is per AP. It is not specified though.

Comment: There could be many channels, and that would complicate the situation.

Answer: STA can do what it needs to do during the delay time period, e.g. query over other channels.

Comment: If the delay is too long, it may turns out to be slower than passive discover mechanism if beacon could be sent at higher rate.

Comment: The come back delay is set to per STA, so that the STA can come back at a pre-specified time.

Comment: Since the frames are sent in state 1, how to ensure that the message is not lost or repeated?

Comment: The Advertisement Server does not need to be specified in the proposal. That is backend and higher layer configuration. And there could be other configurations, e.g. information is buffered at the AP.

Comment: Beacon can only be transferred at base rate. Also, different requests are not sent at the same time (by different STAs), since the channel is shared.

Comment: the amount of data come back can be substantial. So, the active way is more appropriate.

Comment: Does the protocol supports multiple frames coming from the advertisement server?

Answer: Yes. The mechanism accommodates multiple frames. And it is up to the higher layer protocol to decide how to handle it.

Comment: The background says that the target is to help STA to decide which AP to associate. Wouldn't current probe/response enables that?

Answer: STA makes decision based on the information from the backend (in interworking), instead of the AP local information. This mechanism is providing mechanism to help STA get such backend information.

Comment: Why the action frame is used instead of probe/response?

Answer: The probe/response method was proposed at earlier stage. During self evaluation, action frame is identified as a better choice.

Comment: This is only intent for the initial selection (in state 1)

Comment: How do we know it is secure?

Answer: It does not provide security. The information is sent in clear text.

Comment: Probe does not require a SSID. However, action frame needs a specific SSID. Therefore, it may not work.

Answer: The action frame could be used just for downlink response. The uplink request could be a probe request.

#### **Motion 9: Network Selection Confirmation Vote**

**Move that IEEE802.11u approves document 11-06-1014r3 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document**

**Moved by: Necati Canpolat**

**Seconded: Sabine Demel**

Comment: There were suggestions for improvements during the presentation. In the proposed motion, we are not voting on what we are seeing. Would like to propose amendment to the motion.

#### **Motion to amend the Motion 9 text as following (with changes in italic bold):**

Move that IEEE802.11u approves document 11-06-1014r2 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document

**Moved by: Gunnar Nitsche**

**Second: Amjad Soomro**

**Result (for-against-abstain): 21-0-2**

**Motion passed**

#### **Motion 9: Network Selection Confirmation Vote**

**Move that IEEE802.11u approves document 11-06-1014r2 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document.**

**Moved by: Necati Canpolat**

**Seconded: Sabine Demel**

Debates on the motion:

Simon: Would like to speak again the motion. Although the work is good, the text is not ready for the draft.

Amjad: Lots of things in the proposal need correction and clarifications. It is better to it work out (before include it in the draft).

Sabine: Would like to speak in favour of the motion. It is good to capture the work has been done so far. And the changes needed are minor.

Dave: Speak in favour of the motion. Changes could be made later.

Amjad: But it is not clear what changes would be made.

Dave: Approving the proposal will allow us to have a draft to work on.

Sabine: Draft without the network selection part would not be complete, and would make certain things incorrect (e.g. emergency Service)

Simon: It is always easier to work on contributions than on the draft. Getting things right outside the draft will be more beneficial.

**Result (for-against-abstain): 11-7-2**

**Motion failed**

Comment: The next proposal on MIH (Media Independent Handover) support has a lot of dependencies on the network selection procedures. It is not clear how the MIH could be included in the draft (without the network selection portion).

Stephen (Chair): It is up to the presenter to decide if a motion should be raised to approve the MIH proposal.

Comment: Emergency Service solution also depends on that. We would have a draft that is not complete.

Comment: Prefer a presentation to inform us of the contents. It is not necessary to have a vote.

**4.19 Proposal for General Cluster MIH Support (06/1016r0) Necati Canpolat**

Comment: Why TGu needs to consider IEEE802.21 functions (instead of doing it in TGr)?

Answer: This requirement has been justified in earlier TGu meetings.

Stephen (Chair): It is up to the company to propose solution to meet TGu (MIH Support) requirements. There is no official mandatory requirement on the support of IEEE802.21 in TGu as a project.

Comment: IEEE802.21 is about handover.

Answer: This proposal is for providing the relevant information without association.

Comment: If the STA is associated, does it need to do this?

Answer: Once it is associated, STA can use higher layer to do that. There is no need for IEEE802.11 to do anything special.

Comment: When the STA is associated, information still needs to go through IEEE802.11 MAC

Answer: In state 3, MIH information could be transferred as data, and it is transparent to IEEE802.11 MAC.

**Motion 10: MIH (media independent handover) confirmation vote:**

**Move that IEEE802.11u approves document 11-06-1016r0 and requests the technical editor to use it in the creation of the initial IEEE802.11u draft document.**

Comment: Network selection is referred in section 7. If this proposal is accepted, would it make that portion in to draft automatically?

Stephen (Chair): We will have an incomplete draft. Editor will sort it out.

**Moved by: Necati Canpolat**

**Seconded: Sabine Demel**

Debates on the motion:

Amjad: Approving this will result in an incomplete draft. Would like to speak against the motion.

Sabine: It doesn't matter since we will have an incomplete draft anyway.

Farooq: All drafts are started from incomplete status.

Question is called without any objection.

**Result (for-against-abstain): 12-5-5**

**Motion failed.**

**Motion 11: Move that IEEE802.11u requests a motion during the IEEE 802.11 WG closing plenary to approve document 11-06-1014r3 and 11-06-1016r1 which request the IEEE802.11u technical editor to use it in the creation of the initial IEEE802.11u draft document.**

**Moved by: Sabine Demel**  
**Seconded: Necati Canpolat**

Amjad: Move to amend the motion as:

Motion to amend: Move that IEEE802.11u requests a motion during the IEEE 802.11 WG closing plenary to approve document 11-06-1014r3 and 11-06-1016r1 which request the IEEE802.11u technical editor to use it in the creation of the initial IEEE802.11u draft document, while noting that the motion to include the above document in the IEEE802.11u draft failed with result ...

“Orders of the day” called. Session has to adjourn since stop time is reached.

**Meeting adjourned till September meeting.**

**Motion 11 is left open on the table, and it could be the first agenda item in September meeting.**

**IEEE P802.11  
Wireless LANs**

**Minutes of 802.11 Task Group V  
Wireless Network Management  
San Diego, California  
July, 2006**

Date: 2006-07-20

**Author(s):**

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### Abstract

This document records minutes of the 802.11v Task Group meeting of July 2006 at San Diego, California.

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# 1. Monday Afternoon Session, July 17, 2006

## 1.2. Opening

### 1.2.1. Call to order

- 1.2.1.1. Pat Calhoun (PatC): I call the meeting to order.
- 1.2.1.2. Meeting convened at 1600 hours.
- 1.2.1.3. PatC: I show the pre-meeting information 06/927r2 on the screen.

## 1.3. Process

### 1.3.1. Review of Patent Policy

- 1.3.1.1. PatC: I would like to read the patent policy shown on the screen from document (06/927r2). [reads] Are there any questions on the policy? None. Does anyone know of any patents that the chair should be advised of at this time? No. Let us proceed.

### 1.3.2. Review of Inappropriate Topics

- 1.3.2.1. PatC: I would like to read a list of topics that will be forbidden in meetings. [reads] Any questions? No.

### 1.3.3. Approval of Minutes from Last Session

- 1.3.3.1. PatC: Does anyone wish to move to adopt the minutes from the last meeting? Yes.
- 1.3.3.2. To approve meeting minutes in Document 11-06/741r1
- 1.3.3.3. Moved: Emily Qi
- 1.3.3.4. Seconded: Floyd Simpson
- 1.3.3.5. PatC: Is there any objection to accepting the minutes? No. The minutes are accepted unanimously.

### 1.3.4. Approval of the agenda

- 1.3.4.1. PatC: Are there any comments regarding the agenda 927r2. Yes. We have a very full agenda, and presentations will consume much of our time. We shall review our goals and objectives, and then move onto our text submissions. Floyd would you be willing to swap with Marian Rudolf? No. Joe Kwak, how about a swap?
- 1.3.4.2. JoeK: I thought this was already all worked out.
- 1.3.4.3. PatC: No, just the presentations, not the times. I just plugged them in. You are not prepared to present yours now?
- 1.3.4.4. JoeK: No.
- 1.3.4.5. PatC: Emily, are you ready? No.
- 1.3.4.6. MarcEmmelman: I am ready and can switch.
- 1.3.4.7. PatC: Thank you. By the way, for those of you who haven't heard, Harry Worstell will be substituting for me tomorrow. Alan, can you present tomorrow? Yes.
- 1.3.4.8. FloydBackes: You want me tomorrow morning?
- 1.3.4.9. PatC: No, tomorrow afternoon.

- 1.3.4.10. PatC: Does anyone know what prompted the ESIF item? If we don't have information on this we should think about dropping it. Let's look at Thursday (reviews). Jari, how much time do you need?
- 1.3.4.11. JariJokela: 25 minutes
- 1.3.4.12. PatC: Emily, how about your presentation?
- 1.3.4.13. Emily: I need slot for 15 minutes, perhaps on Tuesday.
- 1.3.4.14. PatC: Are there any other changes to the agenda? No.
- 1.3.4.15. Emily: It looks as if Interference Diagnostics has a mistake, ending at 1540
- 1.3.4.16. PatC: Sorry (fixes)
- 1.3.4.17. Emily: Also the title is Power Saving for DFS has a typo.
- 1.3.4.18. PatC: OK Thanks. (fixes) I now show the modified agenda,

**Monday:**

- Review IEEE patent policy
- Approve minutes from last meeting
- Approve Agenda
- Review weekly goals & Objectives
- TGv Text Submissions
- 16:10-16:55 - 11-06-0711-01-000v-managed-object-request-response (Kwak)
- 16:55 - Recess for the day

**Tuesday:**

- TGv Text Submissions
- 13:30-14:15 - 11-05-1068-04-000v-multilevelrpower (Backes)
- 14:15-15:00 - 11-06-0956-00-000v\_Preferred\_Channel\_Power\_Saving (Kwak)
- 15:00-15:30 - Prepare Response to ESIF sub-committee B (ATIS Emergency Forum)
- 15:30-16:00 - Break
- 16:00-16:30 - Prepare Response to ESIF sub-committee B (ATIS Emergency Forum)
- 16:30-17:15 - 11-06-0950-00-000v-WLAN Paging and Idle Mode (Qi)
- 17:15-17:45 - 11-06-0975-00-000v-Dynamic signaling of parameter for target network behavior and operation (Emmelman)
- 17:45 - Recess for the day

**Thursday:**

- AM Session
- TGv Text Submissions
- 08:00-08:45 – Time synchronization over 802.3 and 802.11 LANs for AV applications, with implications to TGv (Stanton)
- 08:45-09:30 – Management Unicast Extensions (Epstein)
- 09:30-10:00 Re-evaluate Milestones
- PM Session
- TGv Text Submissions
- 13:30-14:15 - 11-06-0947-00-000v-Broadcast and Multicast Enhancements (Thomson)
- 14:15-15:00 – Interference Diagnostics (Jokela)
- 15:00-15:30 – Plans for July
- New/Old Business
- Adjourn

- 1.3.4.19. PatC: Are there any objections to using this agenda? None. Very well, let's proceed with the presentations.

**1.3.5. Presentation of Document 05/827r8**

- 1.3.5.1. Emily Qi places document 05/827r8 on the screen so that the group's requirements can be reviewed.
- 1.3.5.2. PatC: I would like to review this document to see if item1400, Access Control Mechanism, has a sponsor. Should we be working on this?
- 1.3.5.3. Floyd: It does seem that this should not be in TGv.
- 1.3.5.4. PatC: We just want to see if anyone still cares about this. We shall not drop it, because the document is informational.
- 1.3.5.5. WalterBugas: It seems like this would be a useful capability in TGv.

- 1.3.5.6. JoeK: I'd be against taking anything out of this document. It shows all the things that were viewed as "in scope" when we started.
- 1.3.5.7. PatC: My concern is that at the time of the internal review we need to know when we are getting close to the end.
- 1.3.5.8. JoeK: I believe that we shall run short of time.
- 1.3.5.9. Straw poll: Are people comfortable with moving these comments to an "inactive" section. Is there any objection?
- 1.3.5.10. Floyd: We should either get rid of them or leave them in. We shouldn't move them.
- 1.3.5.11. Sudheer: 1400 still belongs in there.
- 1.3.5.12. PatC: Straw poll: Do you want objectives for which no proposals have been presented, moved to "inactive objectives", remove them from the document, or leave it as-is?
- 1.3.5.13. Move to "inactive objectives": 1
- 1.3.5.14. Remove them from the document: 9
- 1.3.5.15. Leave the document as-is: 13
- 1.3.5.16. PatC: We shall leave the document as it stands.
- 1.3.5.17. Accordingly, we shall discuss the deltas from last meeting to this. I'd like to go through the open ones just to see who will be submitting:
- 1.3.5.18. Access Control Mechanism None
- 1.3.5.19. Management Message Timeliness: Sudheer Matta
- 1.3.5.20. AP Firmware Updates: None
- 1.3.5.21. Deferred Management None
- 1.3.5.22. Access Point Coordination None (Timing, QoS, etc.)
- 1.3.5.23. Advanced Antennas
- 1.3.5.24. PatC: JoeK, will you be presenting any more on advanced antennas?
- 1.3.5.25. JoeK: There may not be anything further.
- 1.3.5.26. PatC: Are there any other comments on the objectives?
- 1.3.5.27. JoeK: Should we be considering TGk updates?
- 1.3.5.28. Sudheer: We left that open.
- 1.3.5.29. PatC: Anyone bringing new requirements? No.
- 1.3.5.30. Floyd: Algorithms? Should we consider algorithms a requirement?
- 1.3.5.31. PatC: Would that be a new objective? Probably not.
- 1.3.5.32. Emily: The presentation on Tuesday on "Direct Link" may carry with it a new objective.
- 1.3.5.33. DavidGreenstein: AP Coordination would be absolutely required.
- 1.3.5.34. PatC: But, discussing algorithms, It is very difficult to get vendors to agree on a common approach.

### 1.3.6. Presentation of Document 06/975r0

- 1.3.6.1. Marc Emmelman presented document 06/975r0 concerning dynamic signaling of parameters for target network behavior and operation. The goal is to provide a coherent upper layer interface for network management. Different vendors will employ their own algorithms; algorithms with different aims may hinder each other and may cause poor performance. This presentation recommends signaling of the optimization criteria. Thus APs could infer what other APs may choose to do. APs could also negotiate common optimization criteria. So providing mechanisms only for network management could result in unintended network behavior as different vendors might use them for different purposes employing different criteria.

- The presentation seeks to standardize announcement of “optimization criteria” or “negotiation” capability.
- 1.3.6.2. Dave: The negotiation is an interesting one. You must have a mechanism to coordinate APs. You have demonstrated the need, but AP coordination is required.
- 1.3.6.3. Marc: There are several ways by which this could be accommodated.
- 1.3.6.4. FloydB: I suggest that agreeing on the objectives is sufficient to prevent network collapse. For spectral etiquette for example, it may be necessary to actually use the same algorithm.
- 1.3.6.5. Marc: I believe that that this is another step along the way. I think a goal is the minimum sufficient level to standardize. If you choose an algorithm, I believe that I can make the network collapse.
- 1.3.6.6. JoeK: I think this an interesting paper from a theoretical view, but I think you are implying that a standard can resolve conflicting algorithms, and I think this is intractable. Your example using self-sizing algorithms itself demonstrates that many algorithms can be used. This turns to an  $N \times N$  problem, which would have to be integrated into the standard. Either that or you end up with a lame attempt to announce the policies. We should concentrate on defining the problem, and standardizing a simple solution. I think this is just too complex to implement.
- 1.3.6.7. Marc: I am not trying to resolve conflicts between algorithms. The important thing is to get the algorithms to agree on the goal.
- 1.3.6.8. JoeK: If the algorithms know the goal, they will still conflict. In the end you will have to manage the network. If you can identify particular conflicts, then these should be addressed.
- 1.3.6.9. PatC: Do you wish a straw poll? Yes.
- 1.3.6.10. Do you feel that the ideas described in 06/0975r0 should be considered in scope for TGv?
- 1.3.6.11. Yes 7
- 1.3.6.12. No 10
- 1.3.6.13. PatC: We could move a presentation up. Emily, are you ready? No.
- 1.3.6.14. Jari? No not ready. Anyone? No. Are there any other topics anyone would like to forward? Otherwise we shall adjourn.
- 1.3.6.15. Emily: There is an item on Tuesday. Emergency calls.
- 1.3.6.16. JoeK: I thought Steve McCann was handling this?
- 1.3.6.17. PatC: Let me see if I can find the document. There was a meeting between Steve and myself. We decided that we would work on location components.
- 1.3.6.18. JoeK: I found it: 06/0557r0
- 1.3.6.19. PatC: But this letter seems to show nothing within our PAR scope. It would seem we do not actually have to work on this. This will save us some time. Let me rearrange the agenda. [Works with group to rearrange presentations and lengthen allotted times. I show the modified agenda on the screen.

**Monday:**

- Review IEEE patent policy
- Approve minutes from last meeting
- Approve Agenda
- Review weekly goals & Objectives (11-06/0827r8)
- TGv Text Submissions
- 17:10-17:55 - 11-06-0975-00-000v-Dynamic signaling of parameter for target network behavior and operation (Emmelman)
- 17:55 - Recess for the day

**Tuesday:**

- 
- TGv Text Submissions
- 13:30-14:15 - 11-05-1068-04-000v-multilevelpower (Backes)

- 14:15-15:00 - 11-06-0947-00-000v-Broadcast and Multicast Enhancements (Thomson)
- 15:00-15:30 - Interference Diagnostics (Jokela)
- 15:30-16:00 - Break
- 16:00-16:30 - 11-06-1012-00-000v-Power Saving for DLS
- 16:30-17:15 - 11-06-0950-00-000v-WLAN Paging and Idle Mode (Qi)
- 17:15-17:45 - 11-06-0711-01-000v-managed-object-request-response (Kwak)
- 17:15-17:45 - 11-06-0711-01-000v-managed-object-request-response (Kwak)
- 17:45-18:00 - Open for now...
- 18:00 - Recess for the day

**Thursday:****•AM Session**

- TGv Text Submissions
- 08:00-08:45 - Time synchronization over 802.3 and 802.11 LANs for AV applications, with implications to TGv (Stanton)
- 08:45-09:30 - Management Unicast Extensions (Epstein)
- 09:30-10:00 Re-evaluate Milestones

**•PM Session**

- TGv Text Submissions
- 13:30-14:15 - 11-06-0956-00-000v\_Preferred\_Channel\_Power\_Saving (Kwak)
- 14:15-15:00 - BSS Channel Switch (Kwak)
- 15:00-15:30 - Plans for July
- New/Old Business
- Adjourn

- 1.3.6.20. PatC: Is this agenda OK with everyone? Yes. Accepted unanimously. Is there any further business? Otherwise we shall adjourn.
- 1.3.6.21. Floyd: Need to correct closing time on Tuesday.
- 1.3.6.22. JoeK: Don't forget to sign in on Newton.
- 1.3.6.23. PatC: Shows login procedure. Thanks, Joe, for reminding me of this. All members make sure you update your attendance on the server.

**1.4. Closing****1.4.1. Recess**

- 1.4.1.1. PatC: Is there any objection to recessing until tomorrow? None.
- 1.4.1.2. Recess at 1705 hours.

**2. Tuesday Afternoon Session, July 18, 2006****2.2. Opening****2.2.1. Call to order**

- 2.2.1.1. HarryWorstell (HarryW): I call the meeting to order. I will be chairing this session, since Pat is not available.
- 2.2.1.2. Meeting convened at 1334 hours.

**2.3. Process****2.3.1. Agenda Review**

- 2.3.1.1. HarryW: Let's review the agenda. Is everyone OK with this?
- 2.3.1.2. Sudheer: I would like to fill a last slot for the day. (1745 -1800)
- 2.3.1.3. HarryW: Please place this on the server. Can we approve this agenda change?
- 2.3.1.4. Move Al Petrick
- 2.3.1.5. Second Floyd Backes

- 2.3.1.6. HarryW: Is there any discussion. No. Are there any objections? No. Is there any objection to approving the agenda change by unanimous consent? No. Adopted unanimously.
- 2.3.1.7. HarryW: Floyd, are you ready with your presentation? Yes.

### 2.3.2. Presentation of Document 06/0498r2

- 2.3.2.1. Floyd Backes presented document 06/0498r2, Multi-Level Power Control. This material has been presented several times, and is being presented again to review changes precipitated by discussion at the last meeting. The submission is intended to provide the capability to adjust the power of data frames for all or selected stations in a BSS (including before they transmit for the first time). The technique could be used for dynamic or static power control. A new IE for "Transmit Power Limit" is created, with a new Action Frame, which may be broadcast or unicast. Last minute additions include change of "Transmit Power Limit" to "Relative Power Limit", and add a response frame to explicitly acknowledge a directed Transmit Power Limit Request. Given the fullness of the agenda, I would like to accommodate the changes by explicit mention in my proposed motion:
- 2.3.2.2. Move to include the substantive text in document 11-05/1068r6, with the addition of changing all instances of "Transmit Power Limit" to "Relative Power Limit" and the addition of a Relative Power Limit Response frame into the TGv draft.
- 2.3.2.3. Sudheer: I suggest you offer the motion without the changes first.
- 2.3.2.4. FloydB: Harry, if I bring this motion, can it be brought again in July?
- 2.3.2.5. HarryW: Only if it is a motion for reconsideration.
- 2.3.2.6. JoeK: I believe you should move for the document on the server and if it fails, bring it to the floor later in the week.
- 2.3.2.7. RogerDurand: I believe this is a significantly different motion (converting to relative power control). Also, all management frames, including RTS/CTS should be included. Otherwise, more interference will result causing more problems. RTS/CTS is uncommon.
- 2.3.2.8. AlanThomson: This motion is significantly different, so I would like to see draft text.
- 2.3.2.9. Floyd: Hearing the mood of the group, I would like to remove the action frame from the motion and go ahead:
- 2.3.2.10. Move to include the substantive text in document 11-05/1068r6, with the addition of changing all instances of "Transmit Power Limit" to "Relative Power Limit" into the TGv draft.
- 2.3.2.11. Moved: Floyd Backes
- 2.3.2.12. Second: Sudheer Matta
- 2.3.2.13. HarryW: Is there discussion on the motion? No. Is there any objection to calling the question? No. Please hold up your voting tokens.
- 2.3.2.14. 14 For, 9 Against, 14 Abstain The motion is technical requiring 75%, and the motion fails.

### 2.3.3. Presentation of Document 06/1030r1

- 2.3.3.1. The presentation by Alan Thomson is in document 06/1030r1 on Broadcast and Multicast Enhancements focusing on battery power saving in devices. A Flexible Broadcast Multicast Service (FBMS) message framework is introduced, with request and response and advertisements.
- 2.3.3.2. MikeMontemurro: Why can't this be done from the AP?
- 2.3.3.3. Dave: This saves more battery power.

- 2.3.3.4. HenryPtasinski: If the AP wanted to use the value provided by the second station can follow-on exchanges occur?
- 2.3.3.5. Alan: Yes.
- 2.3.3.6. Henry: Would the same frames be sent twice?
- 2.3.3.7. Alan: No.
- 2.3.3.8. Henry: Would any stations entering the coverage area have to engage?
- 2.3.3.9. Alan: Yes.
- 2.3.3.10. Emily: I refer to document 06/0947r0, with normative text. For the information element on page 5, 7.3.2.43 shows the TCLAS element as optional. May I conclude it may be present or not? The delivery interval is mandatory, right? Yes.
- 2.3.3.11. Alan: This is congruent with TCLAS usage in TGe.
- 2.3.3.12. Emily: How big is the TCLAS information element? I'm worried about the size. What is the maximum size?
- 2.3.3.13. Alan: This should not pose a problem.
- 2.3.3.14. Sudheer: How do I delete these things?
- 2.3.3.15. Alan: If you want to remove one or all, just send a request with the new set.
- 2.3.3.16. Sudheer: Yes, that is on the station side. The AP will be stuck with it, though.
- 2.3.3.17. Alan: The AP will notice that the station is no longer active.
- 2.3.3.18. Sudheer: If you can add language to that extent in the draft it would be good. Second, similar to Henry's question: The legacy STAs seem to be suffering.
- 2.3.3.19. Alan: There is a policy where if you know you have legacy in network you can have a policy override to request values. Ultimately there is nothing to stop what a client requests, but the AP has to protect the network. The idea is to protect the network from rogue clients requesting anything.
- 2.3.3.20. Sudheer: This could happen at management level, but not at AP level. What is the TCLAS restriction capability? To maintain a table with all stations will be pretty hard to maintain.
- 2.3.3.21. Alan: This will be necessary anyway to restrict what a client can actually request.
- 2.3.3.22. HarryW: Any further discussion. No.
- 2.3.3.23. Alan: I wish to move:
- 2.3.3.24. Move to include normative text in document 11-06-0947-00-000v-bc-and-mc-enhancements into the TGv draft.
- 2.3.3.25. Moved: Alan Thomson
- 2.3.3.26. Second: Jari Jokela
- 2.3.3.27. HarryW: Is there any discussion? No. [Reads motion]. Is there any objection to calling the question? No. The question is called. Please raise your voting tokens.
- 2.3.3.28. 15 For, 4 Against, 23 Abstain. The motion passes.

#### 2.3.4. Presentation of Document 06/0646r4

- 2.3.4.1. Jari Jokela presented document 06/0646r4, Co-Located Interference Diagnostics. The presentation proposes interference detection and diagnostics located in terminals having multiple radios. Normative text may be found in 06/645r1, which was reviewed with emphasis on changes since the last version, eliminating triggering and simplifying frame formats. A mechanism is outlined by which an STA could indicate its current interference situation to an AP, as bursts from other services running concurrently on the device could degrade performance.
- 2.3.4.2. AlanThomson: The response seems tailored to only one signature?

- 2.3.4.3. Jari: Yes. You would need two responses for two interferences.
- 2.3.4.4. Alan: How would that be done?
- 2.3.4.5. Jari: One could have a field that describes the item number of each response.
- 2.3.4.6. HarryW: Any further discussion or questions? No.
- 2.3.4.7. Jari: I wish to move:
- 2.3.4.8. Move to include normative text in document 11-06-0645-01-000v-interference-diagnostic into the TGv draft.
- 2.3.4.9. Moved: Jari Jokela
- 2.3.4.10. Second: Alan Thomson
- 2.3.4.11. HarryW: Is there any discussion on the motion? No. Is there any objection to calling the question? No. The question is called.
- 2.3.4.12. 9 For, 5 Against, 22 Abstain The motion fails.

### 2.3.5. Presentation of Document 06/1012r0

- 2.3.5.1. Emily Qi presented document 06/1012r0, Power Saving for DLS. DLS was proposed in 802.11e, and now part of 802.11REVma. DLS does not currently support power saving, however, because of the bi-directional nature of the link.
- 2.3.5.2. Alan: What is opinion of REVma group?
- 2.3.5.3. HarryW: Please repeat the question using the microphone?
- 2.3.5.4. KevinHayes: I will repeat the question. [repeats]
- 2.3.5.5. Emily: Did you attend "ma"?
- 2.3.5.6. Kevin: No. but this seems to belong where the protocol is designed.
- 2.3.5.7. Emily: When I attended, a solution suggested was to convert to unidirectional, but this seems to avoid rather than fix the problem.
- 2.3.5.8. Kevin: I would not like to see the protocol split into "now" and "later". They should be in one protocol.
- 2.3.5.9. HenryPtasinski: Since there is much activity in REVma, I think it should be done all in one place. This may also impact security. "ma" may not be the right place, but it should all be done in the same place.
- 2.3.5.10. HarryW: Is there any further discussion? No.
- 2.3.5.11. Emily: May I have a straw poll?
- 2.3.5.12. Is Power Saving for DLS in scope of TGv?
- 2.3.5.13. 6 Yes, 31 No.

### 2.3.6. Presentation of Document 06/0950r0

- 2.3.6.1. Emily Qi presented 06/0950r0 WLAN Paging and Idle Mode. This is a joint proposal with companion text in 06/0943r2. The requirement is #2010. This was first presented at a previous meeting, but has been modified. The goal is to extend the standby hours for handheld devices and Ultra-Mobile PC (UMPC) devices. It addresses power-dissipation issues arising from having to receive BC/MC messages, scanning overhead for AP selection, and handling BSS transitions while roaming (including key management). Idle mode is introduced, wherein the client "deep sleeps" if there is no outgoing/incoming traffic. During sleep, STA wakes at longer sleep intervals (e.g. seconds). WLAN Paging and Idle mode concepts are introduced including Paging Domain, Paging Group, and Paging Server. The associated procedures are described, including paging capability advertising and discovery, entry/exit/update of STA idle mode, AP broadcast of Paging Indication, and awakening of STA to receive the paging indication.

- 2.3.6.2. HarryW: We are running close to the break. Is there any objection to recessing until 1550 Yes.
- 2.3.6.3. AlanThomson: If every AP is quiet while radar is transmitting, doesn't this cause problems for radar detection?
- 2.3.6.4. Emily: The STA would not receive any paging indications
- 2.3.6.5. Alan: Because the APs have suppressed transmission.
- 2.3.6.6. Emily: I don't see why this is different from regular operation.
- 2.3.6.7. Alan: Did you resolve in the text how packets queued are handled?
- 2.3.6.8. Emily: For this proposal it seems out of scope. This is up to the implementer (forwarding queued packets seems a system issue).
- 2.3.6.9. ArnoW: Performance numbers provided by Samsung in January would seem to indicate only 2% power saving. What is the use case we are addressing? This would seem to provide only 10 minutes of saved operating time in a typical battery scenario. In a roaming situation this doesn't seem worth it.
- 2.3.6.10. Emily: I am unaware of these numbers, but it seems that one could calculate how many "roams" could usually happen in 10 minutes, this would seem a rare case.
- 2.3.6.11. Arno: Are we talking about enterprise cases?
- 2.3.6.12. Emily: Yes.
- 2.3.6.13. Sudheer: I remember some of the numbers. There are three phases going from one AP to another. You are still doing all of the discovery phases, right?
- 2.3.6.14. Emily: No. The scan is not required unless you find you are in a different area.
- 2.3.6.15. Sudheer: I think you have to because when you move away from an AP you will have to scan to find a new AP.
- 2.3.6.16. Emily: You only want to hear messages, not associate.
- 2.3.6.17. Sudheer: After discovery, there are more exchanges.
- 2.3.6.18. RogerDurand: I was expecting you to reply to Sudheer's comments. I am a little confused by not reassociating with the AP you've roamed to. It seems cumbersome. I don't see the value of this to save power. How do I know who to send a packet to if the STA has not reassociated? I'm not sure this will work.
- 2.3.6.19. Emily: The beacon paging process allows this to work.
- 2.3.6.20. RogerD: It seems the process could require a long time (minutes) to complete. You have to respond in a reasonable time.
- 2.3.6.21. Emily: We've assumed 5-8 seconds. Association is fast, if it is required.
- 2.3.6.22. RogerD: In two or three seconds I can walk behind a wall in the building, and that would cause confusion about who to send the call to. I am not yet associated.
- 2.3.6.23. Emily: The old access point would notify the server that the STA is gone.
- 2.3.6.24. Durand: I believe STAs should reassociate while moving. I don't trust the network to reconnect me after I break.
- 2.3.6.25. HarryW: Let's save questions until after the break, which is overdue.

### 2.3.7. Recess

- 2.3.7.1. HarryW: Is there any objection to recessing until 1605? None.
- 2.3.7.2. Recess at 1535

### 2.3.8. Call to order

- 2.3.8.1. HarryWorstell (HarryW): I call the meeting to order.
- 2.3.8.2. Meeting convened at 1605 hours.
- 2.3.8.3. HarryW: Emily, are you ready to continue with a review of the normative text? Yes.
- 2.3.8.4. Emily: [Outlines the normative text].
- 2.3.8.5. HarryW: Are there any questions? No. Emily, have you any motions or polls? No. May we have Marian's paper now then?
- 2.3.8.6. JoeKwak: Marian was called away suddenly, and asks that the contribution be rescheduled for next meeting.
- 2.3.8.7. HarryW OK, Sudheer? Yes

### 2.3.9. Presentation of Document 06/1046r1

- 2.3.9.1. Sudheer Matta presented document 06/1046r1 Broadcast Probe Response. Probe requests are sent for many reasons: to find a network, to find a "better" network, for rogue detection, for location. and many others. Probe requests are sent as often as an application needs or the developer feels is appropriate, with a range of 20 mSec to much longer times. This presentation advocates enhancing probe requests to let everyone receive them, expanding to broadcast applications. It is suggested that if all probe responses could be heard by all devices, it can minimize the total number of probes that must be handled by the network. Legacy devices would probe normally, but 802.11v devices would probe with the broadcast probe capability indication set.
- 2.3.9.2. AlanThomson: I don't see anything preventing stations from decoding today's unicast probe responses.
- 2.3.9.3. Sudheer: Today this is not done.
- 2.3.9.4. Alan: Agree, but there is nothing preventing it.
- 2.3.9.5. Sudheer: The reason is that filtering of packets is done.
- 2.3.9.6. Alan: You need to process the header anyway, so why not?
- 2.3.9.7. SunyhunChoi: What about using beacon scanning?
- 2.3.9.8. Sudheer: This could be done, but if the probe broadcast technique was standardized, it would provide a common protocol so that all vendors would adhere to it.
- 2.3.9.9. Sunyhun: I think this can be done with today's capabilities.
- 2.3.9.10. Sudheer: The probe response is of value even when the overheard one didn't belong to the channel. If we don't have to add this, then perhaps we could provide a standardized way we could handle "overhearing" unicast responses.
- 2.3.9.11. AlanThomson: The state machine built into some legacy clients may not allow this.
- 2.3.9.12. Sudheer: I agree
- 2.3.9.13. Alan: If you hear a probe response not on your channel, and you know it's not on your channel, what happens?
- 2.3.9.14. Sudheer: The channel number is in the response, so you could ignore it.
- 2.3.9.15. RogerD: I think there is some value on this. Some might call it a promiscuous mode, but the power dramatically increases that way. Right now, clients are selfish and this approach could improve the situation.
- 2.3.9.16. TomT: There is value here. However, you appear to have violated rules with the MAC header address format. Are you really wanting to dictate limits on probes to ensure that unnecessary probing isn't done---as opposed to making probes more complicated.

- 2.3.9.17. Sudheer: The address format is reflected in other frames...
- 2.3.9.18. TomT: Yes but not management frames.
- 2.3.9.19. Sudheer: But the hardware can handle 4 addresses, though. If we don't enforce this in the standard, no one will do it. No one will implement a "sniffer"
- 2.3.9.20. HarryW: Is there anything further on this? No.

## 2.4. Closing

### 2.4.1. Recess

- 2.4.1.1. HarryW We have concluded our business for today. Is there any other business? No. Is there any objection to recessing until Thursday? No.
- 2.4.1.2. Recess at 1644

## 3. Thursday Morning Session, July 20, 2006

### 3.2. Opening

#### 3.2.1. Call to order

- 3.2.1.1. Pat Calhoun (PatC): I call the meeting to order.
- 3.2.1.2. Meeting convened at 0802 hours.

### 3.3. Process

#### 3.3.1. Agenda Review

- 3.3.1.1. PatC: Joe Epstein, are you ready to present? No.
- 3.3.1.2. FloydB: I would like to present.
- 3.3.1.3. PatC: Is there any objection to changing the agenda? No. [changes, removing JoeE and adding FloydB]. As a reminder, please remember to register you attendance. Let us move forward with the presentations.

#### 3.3.2. Presentation of Document 11/06-0984r0

- 3.3.2.1. Kevin Stanton presented Time Synchronization for AV Applications Across Wired and Wireless 802. LANS 11/06-0984r0. Aimed at applications that require rigorous time synchronization, such as remote speakers (an application that appears to be highly desirable to home network users). These applications need synchronization for simultaneous "start" and long term drift as well as 11 $\mu$ Sec for stereo and 15-45 mSec for lip sync. The 802.1AS – Time Synchronization standard is based on the emerging IEEE 1588 version 2 for industrial time synchronization.
- 3.3.2.2. AlanThomson: What is the accuracy assumption?
- 3.3.2.3. Kevin: 100 ppm
- 3.3.2.4. JoeEpstein: Please talk about variability, jitter, etc.
- 3.3.2.5. Kevin: This is handled by a crystal oscillator.
- 3.3.2.6. DavidGreenstein: 100 nSec not possible with standard crystal. Have you separated accuracy and drift?
- 3.3.2.7. Kevin: Yes, and I believe you will see this in the balance of the presentation. [continues] Protocol is run on each link using a master-slave scheme. A packet is sent by the master. Time stamps are taken based on local clocks

- to determine link delays, and then a difference is calculated to determine the offset.
- 3.3.2.8. BobOhara: If the device is mobile, is that a problem?
- 3.3.2.9. Kevin: No, would have to be moving very fast to disrupt accuracy.
- 3.3.2.10. Alan: Requires line of sight, though?
- 3.3.2.11. Kevin: Yes, it requires definition of the start of the signal, so multipath could distort reading. The accuracy does not require strong measures however. [continues] The presentation examines application of 1588 messages directly to 802.11, modifying TGv presence response (requires some location reference and bi-directional use or supplementation of link delay measurement with 1588-like sync message timestamp in hardware), or use TSF time. The presenter urges that 802.11 and 802.3 work together to develop and standardize a common approach.
- 3.3.2.12. JoeE: You need how many nSec for link?
- 3.3.2.13. Kevin: 40-100 nSec of accuracy in timestamp itself is required.
- 3.3.2.14. JoeE: With wireless you have about 10 nSec just due to range, so negligible link transit delay. This results in microsecond-range TSF. How are you doing sync across layers of the hierarchy?
- 3.3.2.15. Kevin: The delay across tiered boxes?
- 3.3.2.16. JoeE: Yes.
- 3.3.2.17. Kevin: The protocol operates on single link at a time, so each link knows its individual delay. This can be shared with other nodes.
- 3.3.2.18. JoeE: Then an intermediate link in the system must report separate delay times to other participants?
- 3.3.2.19. Kevin: This works with relative timestamps for each link. Accumulated offset is communicated separately.
- 3.3.2.20. DavidG: Before 1588 there was a standard that used "double loop" You assume all links are stable (not wireless), and you have not included processing time, etc. Also how often do you sync between nodes?
- 3.3.2.21. Kevin: Processing time determines how quickly info passes through tree. Our simulations use tens of updates per second to avoid errors due to crystal drift. Wireless devices typically have better accuracy and drift than Ethernet devices.
- 3.3.2.22. DavidG: Is the rate part of the standard?
- 3.3.2.23. Kevin: An update rate is contemplated for each media type in the standard.
- 3.3.2.24. Miller: Have you considered synchronization over POE? This allows optional synchronization, with arbitrary location of synchronizing master. Using such a system, the time would be continuous rather than sampled, and could include time-of-day.
- 3.3.2.25. Kevin: Yes and most speakers could use the powering.
- 3.3.2.26. JoeK: This is a very complex approach. For example, why would you not combine the stereo streams in a single coded message. Then they could easily be rendered coherently. Regarding coordination between speakers with broadcast mechanism it seems that that scope is a lot broader than it needs to be.
- 3.3.2.27. Kevin: 1588 was intended for industrial control, and it carries the burden of complexity. We've tried to prune this with a simplified master synchronizer discovery process, transparent clocking, and simplified sub-domain partitioning. We also eliminated layer 3 and 4 headers. The hardware is very simple.
- 3.3.2.28. JoeK: But you've created a system that could sync from NY to Hong Kong.
- 3.3.2.29. Kevin: No, actually. When a router is reached the process will not propagate.

- 3.3.2.30. JoeK: There is also a plug and play problem.
- 3.3.2.31. Kevin: The plug and play is being considered now in the Plug and Play community of interest.
- 3.3.2.32. JoeK: I suggest you work with the new AV study group in 802.11.
- 3.3.2.33. FloydB: I'm glad to see you working on this and simplifying the approach. I believe that Bob Miller's POE has limitations because many installations will not include distributed powering.
- 3.3.2.34. EdwardReuss: Using the maxim, "Encoding is expensive decoding is cheap" I applaud Kwak's suggestion. Also, it appears to need a bridge between 1588 and home infrastructure. Also, how about USB?
- 3.3.2.35. Kevin: All useful suggestions (USB is being worked).
- 3.3.2.36. PatC: Would you like to conduct a straw poll? Yes.
- 3.3.2.37. Is there interest in time synchronization inTGv?
- 3.3.2.38. Yes 27
- 3.3.2.39. No 7
- 3.3.2.40. PatC: Floyd, are you ready? Yes.

### 3.3.3. Presentation of Document 11/06-1068r7

- 3.3.3.1. Floyd Backes presented document 11/06-1068r7 Dynamic Multi-Level Power Control. On Tuesday, the document was presented, but additions received at the last minute made it difficult to move forward. I anticipate no motion here, but wanted to share the improvements. We now show changes to the beacon format, relative power limit, addition of an IE to association response, probe response format, etc. which enables the information to be actionable before association. We added an additional action field value as well. The power limit frame request body has an added dialog token, as well as the response frame. The "transmit power limit" is now called the "relative power limit"
- 3.3.3.2. PatC: Questions? Comments?
- 3.3.3.3. ArnaudMeylan: Need to examine management and control frame coverage, for example effect on RTS/CTS.
- 3.3.3.4. Floyd: Yes, I would welcome more detailed discussion on this.
- 3.3.3.5. JoeK: This is comment about Arnaud's point of view. This seems not a problem since no one uses RTS/CTS unless there are interference problems, and in this case you would want to clear a wide area (higher power) anyway.
- 3.3.3.6. Arnaud: I agree with this, but going forward 11n will use this more extensively. I suggest that we reserve it.
- 3.3.3.7. FloydB: Would specifying specific control frames solve this?
- 3.3.3.8. Arnaud: I must think about it. In general, I would like to preserve the option to let the station decide.
- 3.3.3.9. Dorothy: We are representing as individuals, so we would rather hear comments by individuals rather than companies.
- 3.3.3.10. RogerD: I understand some of the changes since the original presentation, but for example if two adjacent cells share the medium, an approach that adjusts power relatively may result in tiny cells. But this creates coverage holes and throughput difficulties. Thus it is useful to separate management power from control power as this allows adjustments based on how far away adjacent access points are.
- 3.3.3.11. Floyd: In previous work on the subject, I have found great value in separating management and control frames and allowing individual control of power.
- 3.3.3.12. PatC: Any questions or comments for Floyd? No.

### 3.3.4. Review of Timeline (06/927r3)

- 3.3.4.1. PatC: I'd like to review the timeline and see when the group expects to finish. We previously discussed that we would address objectives, and have an internal review in November. [Shows current web-page timeline on screen] We show a working group letter ballot in March 07, so if we still have contributions coming in September we should worry that we might not finish according to the timeline.
- 3.3.4.2. JoeK: The process thus far has actually has worked well: We've coalesced contributions in some areas to mature them and others have not moved due to lack of support. This has acted as a good filter. The problem is that we have had some problems moving forward on some active topics due to insufficient support to reach 75%. We have had to keep improving contributions incrementally, and this will make us extend our timeline.
- 3.3.4.3. Emily: We should keep the current schedule and have ad-hoc meetings to prepare contributions before the September meeting. It's taking too long because we are moving forward with modifications at two-month intervals.
- 3.3.4.4. Arnaud: It seems that some proposals can never make the 75%.
- 3.3.4.5. PatC: That is why I've been trying to urge for definite objectives---so we can know when to finish.
- 3.3.4.6. Arnaud: Can we propose a "no new topics" motion?
- 3.3.4.7. Floyd: Clearly some objectives are more important than others. We should triage the objectives to order them. There are some topics that are much needed, but we just haven't had time to work on them.
- 3.3.4.8. BobM: I underwrite Floyd's comment. There are some topics that are very important that have not been detailed yet. Closing them out due to inactivity is not appropriate.
- 3.3.4.9. DavidGreenstein: The chair can tailor the objectives as part of his office.
- 3.3.4.10. Alan: I suggest that we can go through the open issues.
- 3.3.4.11. Arnaud: I recommend a show of hands.
- 3.3.4.12. PatC: How can we filter the existing ones? Low, medium, high priority? [shows document on screen]. Let's go through these and have straw polls, for the white and yellow topics. Hands up for priority declaration. Anyone can vote. [The following are a series of individual straw polls on the topics marked white and yellow in document 05/827r8. The votes represent "yes" for high priority for work, "no" for low priority]
- 3.3.4.13. **1400 Access Control Mechanism Yes 1 No 24**
- 3.3.4.14. **1410 Management Message Timeliness Yes 0 No 23**
- 3.3.4.15. **1500 Client Management Protocol Yes 6 No 13** (Marian Rudolf is working on this, and was going to present this meeting, but is not currently available)
- 3.3.4.16. **2000 Dynamic Channel Selection Yes 21 No 6**
- 3.3.4.17. **2010 Power Saving Yes 25 No 6**
- 3.3.4.18. Alan: Does this overlay CAP/WAP IETF.
- 3.3.4.19. PatC: Perhaps, but not germane to this vote. Next is AP firmware update.
- 3.3.4.20. JoeK: Why did we restrict to APs only? I don't remember.
- 3.3.4.21. **2020 AP Firmware Update Yes 1 No 31**
- 3.3.4.22. **2040 Deferred (Deferral) Management Yes 9 No 13**
- 3.3.4.23. **2041 Spectrum Etiquette Yes 15 No 9**
- 3.3.4.24. **2050 Access Point Coordination Yes 17 No 12**
- 3.3.4.25. Pat: Next is Contention...
- 3.3.4.26. Alan: What does this do?

- 3.3.4.27. PatC: [Moves to section and reads description]
- 3.3.4.28. **2071 Contention Yes 22 No 9**
- 3.3.4.29. **2080 Advanced Antennas Yes 0 No 23**
- 3.3.4.30. **2100 Adaptive Rate Control Yes 6 No 19**
- 3.3.4.31. **2110 Frequent Handover Avoidance Yes 17 No 9**
- 3.3.4.32. PatC: 2120, Multicast Enhancements was previously addressed in the current meeting, and so has been acted upon)
- 3.3.4.33. Floyd: This isn't binding. Can we make it so?
- 3.3.4.34. PatC: We've tried before, but 75% is required and the group has not endorsed this..
- 3.3.4.35. Floyd: We should try again.
- 3.3.4.36. BobM: I submit that the process is working as a good filter, and that the document (with the straw poll votes) will become part of the record with today's votes. Eventually, topics that do not draw contributions will be eliminated as a matter of course. We need not have a governing list.
- 3.3.4.37. JoeK: I suggest that we adopt Arnaud's "no new topics" approach.
- 3.3.4.38. Emily: I support a "no new features" cutoff time.
- 3.3.4.39. Alan: We have a list, the timeline should reflect work necessary to finish the list.
- 3.3.4.40. Victoria: I suggest a new document with listed prioritized objectives going forward.
- 3.3.4.41. PatC: We have tried to promote such a document before, but the group did not support the idea.
- 3.3.4.42. EdwardR: I suggest we prioritize and consider reducing the number, though.
- 3.3.4.43. PeterEcclesine: Some activities are not represented here, as their supporters are attending other meetings (e.g. Advanced Antennas). They are not represented, yet their interests could be closed.
- 3.3.4.44. TomT We must nevertheless prioritize things.
- 3.3.4.45. JoeK: We are again arguing cutoffs.
- 3.3.4.46. BobM: This is a volunteer body, with a group of talented people who are working hard on topics they believe are important. However, they have competing responsibilities and are moving as fast as possible. This standard cannot be run as a company process where contributors are "managed" to complete on time. The process is working, and will complete when the contributors have had a chance to finish the topics they have signed up to work on. The deadline in the timeline is thus artificial. We should, however, take steps to prevent "creeping featurism" by limiting entry of new topics (by group poll at each meeting).
- 3.3.4.47. PeterE: We need to announce what will be in the draft
- 3.3.4.48. BobO: We should be able to agree on the objectives of the group and deliver draft content on these objectives. However, I also agree that this is a volunteer organization. We should say that it is impossible to meet the current timeline if we believe it so.
- 3.3.4.49. Alistair: You want to limit the scope of a standard, but not eliminate good ideas.
- 3.3.4.50. Floyd: Yes, we need to limit the scope. I would like to bring a motion.
- 3.3.4.51. PatC: We are out of time. You may want to bring such a motion this afternoon when we have agenda time reserved for discussion on the work progress topic.
- 3.3.4.52. BobM: If we entertain votes on scope definition or downselection of topics, the vote time should be fixed and the chair should send notification to the mailing list so that members attending other TGs can be available.

3.3.4.53. PatC: I will do that...

### 3.4. Closing

#### 3.4.1. Recess

3.4.1.1. PatC: We have reached the time limit of this meeting. Is there any objection to recess? No.

3.4.1.2. Recess at 1000 hours.

## 4. Thursday Afternoon Session, July 20, 2006

### 4.2. Opening

#### 4.2.1. Call to order

4.2.1.1. Pat Calhoun (PatC): I call the meeting to order.

4.2.1.2. Meeting convened at 1330 hours.

### 4.3. Process

#### 4.3.1. Presentation of Document 06/0956r0

4.3.1.1. Joe Kwak presented document 06/0956r0, Preferred Channel for Power Saving. This presentation introduces an idea for using a preferred channel to reduce the number of channels which must be scanned for network discovery. Scanning only one channel instead of the whole set can save substantial power (on the order of 80 percent savings). Outlined are the definition, use, power-saving advantage, and implementation of the preferred channel concept. The proposal defines one channel in each regulatory class as the "preferred channel" that STAs can find by scanning passively. If an STA senses activity on the preferred channels it can retrieve Net Advice. APs themselves may transmit Net Advice, or may designate STAs that take turns transmitting Net Advice frames. It will be necessary to take into account emerging requirements (currently in Europe, but probably later in other places) to avoid radar which may operate intermittently on preferred channels. A "baton-passing" technique is proposed to share the burden of Net Advice duty for STAs.

4.3.1.2. PatC: [Questioning as TG member, not chair] I like the idea, but it may be awhile before the technique is pervasive. So if you don't find anything on a preferred channel, you might have to scan all channels. Then have we really made any difference?

4.3.1.3. JoeK: This is the problem with all new features. However in new metro areas, as soon as someone commits to implement it will begin adding value. As adoption builds, then load on individual STAs will lessen.

4.3.1.4. PatC: I am unsure how this dovetails with TGw, since it will not be encrypted. Are we worried about malicious use? I guess that would be true of beacons too...

4.3.1.5. JoeK: It might produce DOS attacks due to competitive network advertisement, for example.

4.3.1.6. PatC: If STAs are advertising on behalf of networks, will service providers trust devices to do the right thing?

4.3.1.7. Sudheer: A good idea, (particularly for radar), but the STA part may be too complicated. If one used dedicated APs instead of STAs, then Net Advice

would be comprehensive and available even more often than beacon intervals.

- 4.3.1.8. JoeK: A good comment, but this is allowed by the procedure outlined using the STA NetAdEnable bit. We would have to argue about the default state of the bit, though. I believe this actually allows more flexibility.
- 4.3.1.9. Sudheer: I like this, but if you simplify by just specifying a frame to do it, then you would get the benefit without the complexity.
- 4.3.1.10. RogerD: The first slides seem to convey the idea of a channel “pecking order”---a “poor man’s” channel selection.
- 4.3.1.11. JoeK: This actually allows more sophistication and options, I believe.
- 4.3.1.12. RogerD: So this comes from the STAs?
- 4.3.1.13. JoeK: It could be provided by STAs or APs.
- 4.3.1.14. RogerD: The STA apparently knows the channel is OK from a radar/regulatory standpoint? How does it know?
- 4.3.1.15. JoeK: That is part of the uncertainty of the idea. STAs would have to determine if radars are present before transmitting. In some cases, the only way this may work well is using a dual-radio AP.
- 4.3.1.16. RogerD: I understand how it works with radar, but I’m concerned if STAs are transmitting without first associating. Do STAs repeat advice from other stations.
- 4.3.1.17. JoeK: The baton passing is shown in the diagram. All off-duty STAs must check the preferred channel to “report in” for Net Advice “duty”.
- 4.3.1.18. Arnaud: On slide 6, at 5 GHz, why are only 8 channels shown?
- 4.3.1.19. JoeK: In the USA there are 11 regulatory classes. The common channels that “spread” across the regulatory classes are listed, and there are 8 of them.
- 4.3.1.20. Arnaud: If the Net Ad frame is replaced by the neighbor report, is any functionality lost?
- 4.3.1.21. JoeK: This is not a replacement for the neighbor report.
- 4.3.1.22. Arnaud: But could the neighbor report be substituted, since it already exists?
- 4.3.1.23. JoeK: We could transmit everything, but the desire is to keep it simpler.
- 4.3.1.24. PatC: Very well, let’s have a straw poll...
- 4.3.1.25. Do you support use of Net Advice on designated Preferred Channels to improve STA power savings?
- 4.3.1.26. Yes 13, No 2

#### 4.3.2. Presentation of Document 06/388r3

- 4.3.2.1. Joe Kwak presented document 06/388r3 with companion normative text in document 06/0387r3 on BSS Channel Switch. This presentation has been modified to acknowledge suggestions spawned by previous presentations. Channel switch request and response have been added, with timers to handle channel switching execution. Optionally, the station can specify an alternate channel number. The idea is used for organized and coordinated channel switching, such as would be required for moving a whole BSS intact.
- 4.3.2.2. AlanThomson: I like the idea of announcing the channel switch but I remain unconvinced the request/response is needed.
- 4.3.2.3. JoeK: The primary reason this is in there is for coordination, and how to reinitialize services on the new channel. We already have 5 GHz “spray and pray”. If you feel this is enough, then you wouldn’t implement this. Otherwise, you would need this.
- 4.3.2.4. PatC: [questioning as TG member, not chair] What if the level of noise is too high for response reception?

- 4.3.2.5. JoeK: If the channel becomes blocked and jammed, then “spray and pray” wouldn’t be needed either.
- 4.3.2.6. PatC: But stations would be better served by not waiting for the response that could be masked.
- 4.3.2.7. JoeK” Yes, I think that’s a point, but I’d like to get it in so we can work it as a draft for improvement.
- 4.3.2.8. RogerD: In the past, folks didn’t support it because there was no acknowledgement. Now that’s in there, but there appears to be no way to make awaiting an acknowledgment optional. I would rather send the message out for the longest time practical to ensure that as many get it as possible, and then go.
- 4.3.2.9. AndrewMyles: How often do you expect that this will happen in real life? If this is infrequent, it may not be necessary. In practice 11h doesn’t actually use this, except as a “quiet the channel” function.
- 4.3.2.10. VictoriaP: I like the channel switch for interference avoidance, and my company has done some private work to implement a similar function. We used the “spray and pray” as a backup at the lowest rate and maximum power.
- 4.3.2.11. TimO: I think this is valuable, and that’s why I voted to put it in at 5 GHz. The only new thing I see is the confirmation frame when the client arrives on the new channel. Wouldn’t any data frame work as well?
- 4.3.2.12. JoeK: Duty cycle is whatever it will be. This allows the switch to be executed when necessary. Duty cycle is orthogonal to need. This is compatible with approaches that do not require the acknowledgement. As Victoria said, if broadcast works well enough, then you might not need it. However, if a network operator has trouble with edge interference, edge stations may “disappear”. This may be important.
- 4.3.2.13. TimO: There are things we have already put into 802.11k to do this. Can you comment why you need a special frame if you’re streaming.
- 4.3.2.14. JoeK: The method allows you to simply resume the stream as an alternative.
- 4.3.2.15. RogerD: This supplements capability already in TGh.
- 4.3.2.16. Sudheer: When an AP goes to a new channel now, the STA has no idea what happened. So I speak in favor of this idea. I think the frame is useful to command the switch.
- 4.3.2.17. AndrewMyles: There is an impact with “spray and pray”, but if the problem doesn’t happen often---why be so concerned with this?
- 4.3.2.18. JoeK: This has to do with seamless service provisioning and network quality, not how often a trouble happens. Moreover, it is dependent on the environment in which you are operating.
- 4.3.2.19. Sudheer: There are many instances where customers will ask, “What happens when my neighbor buys a new AP? If I’m on a phone call when he turns it up, what happens?” I speak in favor of this,
- 4.3.2.20. PatC: OK let’s have a motion
- 4.3.2.21. Move to instruct the editor to include normative text for BSS Channel Switch in 06/0387r3 into the next version of the TGv Draft.
- 4.3.2.22. Moved: Joe Kwak
- 4.3.2.23. Second: Victoria Poncini
- 4.3.2.24. PatC: Is there discussion on the motion? No.
- 4.3.2.25. 17 Yes, 7 No, 8 Abstain The motion fails.
- 4.3.2.26. Alan: I’d like to thank Joe. I think the proposal would be better if confined to 2.4 GHz with request/response only.
- 4.3.2.27. PatC: OK, next on the agenda is planning for next meeting.

### 4.3.3. Review of Work for September Meeting

- 4.3.3.1. PatC: I show document 06/927r2 again, and we have reached the point in the agenda where we shall discuss the work for the next meeting. We have previously looked at our non-binding working document (05/827r8) and I direct your attention to the items we discussed this morning.
- 4.3.3.2. Sudheer: I'm not sure work on this document will serve us going forward since it is non-binding.
- 4.3.3.3. JoeK: This document is serving well to track and queue our work activities.
- 4.3.3.4. Floyd: If you don't have a clear definition it is a difficult to forecast a timeline.
- 4.3.3.5. Sudheer: I am not against this document. We should continue to use this "live". Every session we can take a vote to see how close we are to letter ballot.
- 4.3.3.6. BobM: You have all the information you need to estimate a timeline. One could construct a Gantt chart with the existing document and the work priority indications of the group this morning.
- 4.3.3.7. Floyd: I want to disagree with the driving a stake in the ground at a particular time, though. We should not stop at a particular time, e.g. November.
- 4.3.3.8. TimO: The process of presentations voting things into the draft is part of the IEEE process, and this can happen at any time. The votes themselves are the foreclosure of adding more things.
- 4.3.3.9. RogerD: We should amend the PAR to narrow the scope, then.
- 4.3.3.10. Floyd: Can we modify the PAR?
- 4.3.3.11. PatC: Yes, but could be a protracted process.
- 4.3.3.12. Sudeer: The vote to submit a draft for voting is the milestone.
- 4.3.3.13. PatC: Let me present a draft straw poll...
- 4.3.3.14. Arnaud: Since I requested the poll, I'd like to frame it:
- 4.3.3.15. TGv will no longer accept proposals for topics that have not been presented before or during the November 2006 meeting.
- 4.3.3.16. Yes:
- 4.3.3.17. No:
- 4.3.3.18. TimO: It may be possible to throttle new material via meeting time allocations instead...
- 4.3.3.19. New rewording:
- 4.3.3.20. TGv will no longer provide meeting time for topics that have not been presented before or during the November 2006 meeting.
- 4.3.3.21. Roger: I do not think the rules allow this.
- 4.3.3.22. Floyd: I think we should eliminate the requirements that did not achieve sufficient support as discussed this morning.
- 4.3.3.23. PatC: Nevertheless, lets do a vote
- 4.3.3.24. TGv will no longer provide meeting time for topics that have not been presented before or during the November 2006 meeting.
- 4.3.3.25. Yes 2 No 27
- 4.3.3.26. Floyd: Do you want to continue? No.

### 4.3.4. Discussion of Possible Ad-Hoc Meeting

- 4.3.4.1. PatC: Is there anyone who doesn't think an ad-hoc meeting would be valuable?
- 4.3.4.2. JoeK: Let's understand what is entailed by an ad-hoc.
- 4.3.4.3. Emily: The meeting would cover all objectives and prepare modifications of proposals currently active in preparation for November.

- 4.3.4.4. JoeK: The BSS Channel Switch shows headway, and will not require much extra work. We are now at 71%. This is a “hard room” to play to... An ad-hoc should be used for special acceleration.
- 4.3.4.5. BobM: The innovation process cannot be “driven” by ad-hocs. Communities of interest must get together and get it right the first time before presenting in an environment with so many good people view contributions. I don’t think an ad-hoc will accelerate the process materially.
- 4.3.4.6. PatC: Don’t see a whole lot of impetus for an ad-hoc. I’ll extend our timeline for and extra 6 months, just to keep us honest. I do ask that you communicate with me to better reserve time at the meeting for presentations, *etc.* so that our meetings can be better-organized. I need to know who will be bringing proposals so I can ask the chair for meeting time. [The group lists envisioned presentations and owners]
- BSS Channel Switch (Kwak)**
  - Multi-Level Transmit Power (Rudolf)**
  - WLAN Paging and Idle mode (Qi)**
  - Preferred Channel Power Saving (Kwak)**
  - (Placeholder) Interference Measurement (Kwak)**
  - Co-located Interference Diagnostics (Jokela)**
  - Measurement Pilot Rules (Durand)**
  - Managed Object Request Response (Rudolf)**
- 4.3.4.7. PatC: Is there anything else? No. Very well, is there any new business?
- 4.3.4.8. DavidGreenstein: I will not be in Melbourne, so it would be useful to have a teleconference capability.
- 4.3.4.9. PatC: Let’s have a straw poll on this...
- 4.3.4.10. How many will not be attending in Melbourne? 13
- 4.3.4.11. And also...
- 4.3.4.12. How many of those would dial in? 6

## 4.4. Closing

### 4.4.1. Recess

- 4.4.1.1. PatC: Is there any old business? No. Any new business? No. Since we have completed our work, is there any objection to adjourning TGv? No. Thank you all, and see (most of you) in Melbourne....
- 4.4.1.2. Adjourn at 1524 hours.

1  
2

## IEEE P802.11 Wireless LANs

### Protected Management Frames Minutes for July 2006

Date: 2006-07-18

**Author(s):**

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### Abstract

Minutes of the 802.11 TGw Task Group meeting held during the IEEE 802 July 2006 Session in San Diego, CA from July 16-21, 2006.

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**Session I, Tuesday July 18, 2006 16:00-18:00, Hyatt – Emma B,C**

Meeting called to order by Jesse Walker at 16:00, with Sandy Turner as Recording Secretary.

**Document 06/1049r1, Opening Report, Jesse Walker**

The Chair reviewed the Membership & Anti-Trust information, per slide 4.

The Chair read the IEEE-SA Standards Board Bylaws on Patents in Standards, per slide 5, and asked if everyone understood the Patent Policy. All members understood. The Chair asked if there were any Letters of Assurance the Chair should be aware of. There was no response. The Chair read the Inappropriate Topics for IEEE WG Meetings, per slide 6.

The Chair also went over the Agenda slides on the following:

- Copyright
- Goals

Approved the Minutes of the May 2006 Meeting, 11-06-0786-00, and the teleconferences, 11-06-0904-00 and 11-06-1044-00, by unanimous consent.

The Chair reviewed the detailed proposed Agenda for the week, per slide 10. There were no changes to the agenda and it was approved by unanimous consent.

**Business***Motion 1***Motion: Move to instruct the editor to create P802.11w D0.03****Moved: Nancy Cam-Winget****Second: Henry Ptasinski****Vote: 13-0-1**

The Chair created the following list of presentations and motions that would update the draft:

- 11-06-0271-09 (spreadsheet)
- 11-06-0930-09 (spreadsheet)
- 11-06-0929-00
- 11-06-0848-02
- 11-06-1009-00
- 11-06-0932-00
- 11-06-0931-00
- 11-06-0866-00
- 11-06-0853-01
- 11-06-0852-00

Additional key points during the discussion of preparing the draft to go to Letter Ballot:

- The editor updated the spreadsheet 11-06-0274-09, Review Comments, to incorporate the following:
  - Color key tab of open comments, resolution applied to draft, conflict with resolution and draft (e.g. some comments were based on a previous version of the draft, some comments were on text that had been removed), resolution needs draft text submission
  - Transition between editors and others
  - Jacksonville motions

The Chair asked if there were any objections to the editor's changes. There were none.

A comment was made that the Policies and Procedures required the Draft to be on the server and was approved with a 75% vote. No time requirement was indicated.

59

60 **Document 06/0482r2, RSC Pools for Mgmt Frames, Kevin Hayes**

61 Key points include:

- 62 • If the counters collide in the middle, you need to rekey. Some people implement this with a  
63 Deauth.
- 64 • Slide 7, second bullet, “Guaranteeing Uniqueness with PN: Simply allocate PNs starting from  
65 0xffffffff and subsequently decrease them”, only applies to management frames.
- 66 • If management frame protection (TGw) was enabled, there would be 9 classes (8 for data, 1 for  
67 management).
- 68 • In determining how to put frames in different bins, the frame type would be used as the switch.  
69 For QOS, the TID would do the switch.
- 70 • This submission is contradictory to 11-06-929-00, “Constructing Unique Management Streams”,  
71 which shows an attack that is possible if a keystream is not uniquely identified.
- 72 • There was not enough information in Motion 1 (below) to provide the editor sufficient direction.
- 73 • The following two motions (slide 10, 11) were delayed until normative text was on the server:  
74

75 Motion: Move to instruct TGw editor to make following changes:

76 The 0xff value used as input to the TKIP MIC and CCMP MIC for management frames shall be removed  
77 from those calculations as in accordance with clause 8.3.3.3.278 The 0xff value used as input to the CCMP Nonce for management frames shall be set to 0x00 as in  
79 accordance with clause 8.3.3.3.3

80

81 Motion: Instruct the TGw editor to make the following change:

- 82 • The PN values used for robust management frames shall be drawn from a counter starting at  
83 0xffffffff and the replay check process shall enforce the values are decreasing.  
84

85 **Document 06/0929r0, Constructing Unique Management Streams, Nancy Cam-Winget**

86 Key points include:

- 87 • The probability of this attack can only be reduced in TKIP. Someone suggested removing TKIP  
88 from TGw.
- 89 • There was confusion as to whether replay counters were required or an optimization. Later input  
90 found a “shall” for CCMP in the 802.11i draft 8.3.3.4.3 PN and replay detection bullet b, “Each  
91 transmitter shall maintain a single PN (48-bit counter) for each PTKSA, GTKSA, and  
92 STAKSA.”
- 93 • This document offers a cleaner implementation than the previous presentation since it uniquely  
94 identifies streams without relying on a Deauth to rekey when counters collide.
- 95 • Setting the CCMP Priority as the octet with value (0xff) is not as efficient as setting the  
96 management bit in the Nonce Flags Octet of the Nonce construction to 1.
- 97 • The Chair suggested the 3 parties with differing proposals come back with a single proposal.  
98

99 **Document 06/0866r0 Capability Advertisement, Kapil Sood**

100

101 *Motion 2*102 **Motion: move to instruct the editor to incorporate 11-06-866-00 into the draft**103 **Moved: Kapil Sood**104 **Second: Nancy Cam-Winget**105 **Vote: 10-0-1**

106

107 **Document 06/0931r0 Per-Frame Pseudo Frame Updates, Kapil Sood**

108

109 *Motion 3*110 **Motion: move to instruct the editor to incorporate 11-06-931-00 into the draft**111 **Moved: Kapil Sood**

112 **Second: Suman Sharma**

113 **Vote: 9-0-2**

114

115 **Document 06/0932r0 IBSS Updates, Kapil Sood**

116

117 *Motion 4*

118 **Motion: move to instruct the editor to incorporate 11-06-932-00 into the draft**

119 **Moved: Kapil Sood**

120 **Second: Suman Sharma**

121 **Vote: 9-0-2**

122

123 **Document 06/0852r0, IGTK and DHV KDEs, Fabrice Stevens**

124

125 *Motion 5*

126 **Motion: move to instruct the editor to incorporate 11-06-852-00 into the draft**

127 **Moved: Fabrice Stevens**

128 **Second: Kapil Sood**

129 **Vote: 10-0-3**

130

131 The Chair said the Editor is empowered to make changes to ensure the notation is consistent with the  
132 draft.

133

134 **Document 06/0853r1, IGTK and DHV update examples, Fabrice Stevens**

135 Key points include:

- 136 • The Editor did not feel the last instruction (“Update the state machine diagrams...”) was clear.
- 137 • Fabrice will work with Nancy on the updates.
- 138 • The EAPOL-Key notation needs to be updated to be consistent with 802.11ma Draft 7.0.

139

140 *Motion 6*

141 **Motion: move to instruct the editor to incorporate 11-06-853-01 into the draft**

142 **Moved: Fabrice Stevens**

143 **Second: Kapil Sood**

144 **Vote: 8-0-5**

145

146 **Document 06/1009r0, Remove MUP, Kevin Hayes**

147

148 *Motion 7*

149 **Motion: move to instruct the editor to incorporate 11-06-1009-01 into the draft**

150 **Moved: Kevin Hayes**

151 **Second: Marcus Wong**

152 **Vote: 10-0-4**

153

154 **Document 06/0496r0, Normative Text BMF Protection, Marcus Wong**

155 Key points include:

- 156 • This proposal provides insider protection without unicast, which is a different from the broadcast  
157 protection already in the draft. It is an alternative, not complimentary method.
- 158 • The document required further work in the AKM (distinguish between the two approaches) and  
159 the RSN capability bits sections (a recent motion reduced the number of capability bits).
- 160 • The last time this was presented, concerns were raised on whether current and new hardware  
161 could handle the amount of buffering required to verify the MIC, especially in regard to 802.11n.  
162 A comment was made that the author was asked to provide more information on the effects of  
163 power save mode and a metric on how to measure the impact on the AP.

164

165 **Straw poll: Would you be interested in having optional management frame protection based on 11-**  
166 **06-0496- 00**  
167 **Yes: 3**  
168 **No: 7**

169  
170 The author decided to withdraw his motion.

171  
172 The Chair recessed the session at 18:00.

173  
174 **Session II, Wednesday July 19, 2006 16:00-18:00, Hyatt – Elizabeth C**

175 The Chair convened the session at 16:00.

176  
177 The Chair reminded everyone to enter their attendance.

178  
179 The business for today is to hear technical presentations and update the draft.

180  
181 The Chair created the following list of presentations and motions that would update the draft:

182 11-06-1063-01

183 11-06-1090-00

184 11-06-1068-00

185 11-06-1080-00

186

187 **Document 06/1063r1, CCMP Nonce Construction and Replay Detection Management Frames,**  
188 **Henry Ptasinski**

189 Key points include:

- 190 • This does not apply to TKIP.
- 191 • There was a request to hear Kevin’s proposal prior to a motion on this document since the two
- 192 were related. The Chair agreed as long as the motions were still separate.

193

194 **Document 06/1080r0, Key Stream Uniqueness for Management Frames, Kevin Hayes**

195 Key points include:

- 196 • This is a simpler approach that relies on things already in the standard (802.11i, 802.11ma).
- 197 • 802.11i only addresses the data plane, not the management plane. That is what 802.11w does.
- 198 Management frames do not have QoS and could come at different priorities and sequences than
- 199 the data streams. The construction has to be uniquely identified.
- 200 • Don’t confuse ordering with uniqueness of the key stream.
- 201 • There is no guarantee on the receiver for each class because of the construction. In the 11i
- 202 protocol, the construction guarantees the uniqueness since it includes the priority class in the
- 203 nonce construction. We want to do the same for management by allocating one more bit from the
- 204 reserved field to identify it as a unique stream.
- 205 • A single bit difference in the hash is all we need for uniqueness. Why do we need more entropy?
- 206 • PN is part of the nonce. If you send two frames with different PNs, you will have uniqueness.
- 207 The standard says I should never send two frames with the same PN.
- 208 • QoS was added into the CCMP nonce generation for two reasons: construct unique nonces,
- 209 redundancy in the crypto design. Historically, there are many implementations errors in this
- 210 function where sequence numbers are repeated. It’s a best practice.
- 211 • With different architectures, like wireless switches and routers, it’s possible that management
- 212 frames might be processed in different devices than the data frames.
- 213 • It’s not clear if this would change existing hardware.

214

215 *Motion 8*

216 **Motion: move to instruct the editor to incorporate 11-06-1063-01 into the draft**

217 **Moved: Henry Ptasinski**

218 **Second: Nancy Cam-Winget**

219 **Vote:** 9-6-3 fails

220

221 *Motion 9*

222 **Motion: move to instruct the editor to incorporate 11-06-1080-00 into the draft**

223 **Moved: Kevin Hayes**

224 **Second: Journi Malinen**

225 **Vote:** 7-8-2 fails

226

227 The Chair offered guidance to the two parties in resolving the comment. He suggested studying the CCM  
228 Mode of operation to understand the assumptions that were made.

229

230 **Document 06/1068r0, Section 8.5.6 update, Fabrice Stevens**

231 Key points include:

- 232 • Note 3 was not affected since it was added for APs which do not support pairwise keys.

233

234 *Motion 10*

235 **Motion: move to instruct the editor to incorporate 11-06-1068-00 into the draft**

236 **Moved: Fabrice Stevens**

237 **Second: Nancy Cam-Winget**

238 **Vote:** 12-0-3

239

240 **Document 06/1090r0, Additional Editorial Changes to 11w Draft for MUP Removal, Marcus Wong**

241

242 *Motion 11*

243 **Motion: move to instruct the editor to incorporate 11-06-1090-00 into the draft**

244 **Moved: Marcus Wong**

245 **Second: Jouni Malinen**

246 **Vote:** 11-0-3 passes

247

248 The Chair had the Editor review the proposed resolutions for comments (motion below) before the group.

249

250 *Motion 12*

251 **Motion: move to instruct the editor to incorporate the resolutions to comments 67, 117, 192, 148,**  
252 **174, 181 and 204 found in 11-06-0271-09 into the draft**

253 **Moved: Nancy Cam-Winget**

254 **Second: Fabrice Stevens**

255 **Vote:** 11-0-3 passes

256

257 The Chair asked if there was other business to discuss. Key points include:

- 258 • Adding another key to resolve the priority field issue would add a lot of text.
- 259 • There are two open issues in the internal draft: priority field, Kevin Hayes has an assignment of a  
260 new management IE layout.
- 261 • When the Chair was asked if we could go to Letter Ballot with one unresolved issue, the Chair  
262 replied that under the Policy and Procedures, the Chair felt obligated to rule any such motion as  
263 out of order if he knew of unresolved issues in the draft.

264

265 The Chair recessed the session at 17:31.

266

267 **Session III, Wednesday July 19, 2006 16:00-18:00, Hyatt – Elizabeth A**

268 The Chair convened the session at 08:03.

269

270 *Motion 13*

- 271 **Motion: move to instruct the editor to produce a new draft TGw P802.11w D0.04, incorporating all**  
272 **comments resolved and accepted by the Task Group**  
273 **Moved: Dorothy Stanley**  
274 **Second: Kapil Sood**  
275 **Vote: 11-0-1**  
276  
277 *Motion 14*  
278 **Motion: Move to empower TGw teleconferences on August 17 at 11 AM EDT**  
279 **Moved: Kapil Sood**  
280 **Second: Kevin Hayes**  
281 **Vote: by unanimous consent**  
282  
283 **Document 06/1107r0, Management Frame Field for BIP MIC, Kevin Hayes**  
284 Key points include:  
285     • This fixed field looks like an IE for legacy processing.  
286     • The field is guaranteed to be the last one with the following text in Section 7.3.2.27 “The MMF  
287 shall e inserted immediately preceding the FCS of the MMPDU”.  
288     • There was concern that Clause 7 might need modifications to better describe receiver processing.  
289     • A suggestion was made to define the last field more generically for future use (e.g. a container  
290 with TLDs inside if it). A disadvantage of this approach is that there are only 253 bytes to work  
291 with.  
292  
293 The Chair and Secretary will not be at the next meeting in Melbourne.  
294  
295 **Straw poll: Would you like to recommend that Donald Eastlake be appointed as Temporary Chair**  
296 **for TGw for the Melbourne meeting**  
297 **Yes: 13**  
298 **No: 0**  
299  
300 The Chair adjourned the session at 08:3

301 **References:**

**IEEE P802.11  
Wireless LANs**

**TGy Meeting Minutes from San Diego IEEE 802 Plenary**

**Date:** 2006-7-20

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**Abstract**

This document contains the minutes from the three TGy meetings that occurred during the San Diego IEEE 802 Plenary Session in July 2006.

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## Meeting Minutes from July 2006 IEEE 802 Plenary Session for TGy

### SESSION GOALS

1. Approve Minutes from Jacksonville Interim and Teleconference calls
2. Vote on a recommendation to WG Chair of a permanent Chair for Task Group y
3. Conduct proceedings for hear proposals and discussion on MAC & PHY topics associated with the use of the 3650 band within the US
4. Conduct needed planning through next Plenary

### FORWARD LOOKING GOALS

1. Respond to internal review of comments and other submissions
2. Review of TGy normative text submissions
3. Empowerment of Bi-weekly teleconference calls as needed

### ATTENDANCE

Tuesday AM meeting: 53

Thursday AM meeting: 22

Thursday PM meeting: 19

### Tuesday, July 18<sup>th</sup> 10:30AM Proceedings

- Chair Pro Tem calls TGy's meeting to order at 10:35AM.
- **Document 06/1024r0** contains Chair's Opening Report and tentative agenda (slides 13, 14, & 15)
- Chair reminds attendees of Membership and Antitrust requirements needed for participation in the 802 SA and in 802.11 subgroup
- Chair reads IEEE SA patent statement and reviews inappropriate topics for discussion
- Chair questions attendees as to their understanding of the above stated requirements or a need for clarification. Hearing none..
- Chair provides brief review of the agenda and topics for the Plenary. (06/1024r0)
- Chair asks if there are any changes requested of the proposed agenda outlined in 06/1024r0. Hearing none, Chair continues with proceedings.
- Chair asks if there are modifications or objections to the minutes from the Jacksonville 802 Interim meeting (06/0740r0)
- Chair also requests same for the 3 teleconf's minutes held 6/14/06, 6/28/06, 7/11/06 respectively.
- Chair motions to approve minutes from discussed Interim & conference calls..

**MOTION:** To approve minutes from last Interim meeting as well as the last three conference calls

**Mover:** Jim Petronovich

**Second:** Bruce Kraemer

**Vote:** Yes 25 No: 0 Abstain: 0

**MOTION PASSES**

- Chair Pro Tem gives way to Al Petrick for motion to recommend a permanent TGy Chair
- Al Petrick asks if any one else wishes to be considered for recommendation as TGy Chair
- Seeing no other nominations, Al Petrick motions to recommend Peter Ecclesine as TGy Chair

**MOTION:** Vote to recommend to the Working Group Chair that Peter Ecclesine be appointed as Task Group y permanent Chair.

**Mover:** Peter Ecclesine

**Secunder:** Bruce Kraemer

**Vote:** Yes 30 No: 2 Abstain: 0

**MOTION PASSES**

- Petrick gives way to Chair Pro Tem Ecclesine after vote

**PRESENTATION:** by Eldad Perahia - document number 11-06-1023r0

- Review of Part 90 Topics as they relate to TGy's goals
- References in this presentation: NTIA TR-99-361, FCC Part 2.106, FCC 05-056
- Presentation Finishes

**PHY Discussions: Channelization & CCA/ED**

- Chair starts discussion of 11-06/855r3
  - Discussion of the Bracket notation specifically..
    - [ ] is a majority position
    - [[ ]] is a minority position
  - Review of Edits to REVma doc's/tables.. (see tweaked Annex I & J table in 855r3)
- Discussion of PHY channel edge protection and channel centers
- Brief Channel Set dbiscussion/explanation
- After discussion, chair asks for straw poll to gauge interest in using non-overlapping verses overlapping channels

**STRAW POLL:** All those in favor of using non-overlapping channels with a 5 Mhz guard band at the band edge?

**Poll:** Yes 24 No 0

- Discussion of normative text for draft and which documents feed same.
- Discussion of timing of being able to provide a draft normative text before Thursday PM2 meeting time slot for possible approval/voting.
- Chair asks for motion to use 855r3 in the formation of draft text to be edited and prepared for Thursday's meeting PM2 slot..

**MOTION:** Instruct the editor (Peter E) to use 11-06/0855r3--after removing the double bracketed text--as a starting point for normative text that, if approved, could become draft D0.01 for TGy

**Mover:** Eldad Perahia

**Secunder:** Dan Lubar

**Vote:** Yes: 22 No: 1 Abstain: 6

**MOTION PASSES**

**Discussion of 0955r0: Clear Channel Assessment and Energy Detect**

- Section 18.4.8.4 usage in the TGy draft
- New language needed for annex J to handle TGy, 17.3.6 CCA text from Standard stays the same,
- Behavior limit set edits are needed.. number 9 is incorrect.. a new number-- 10 -- is needed and 9 should be corrected
- Chair points out change in nomenclature of CCA replaced by CCA/ED
- Review of CCA Sensitivity
- Review of MIB's from high rate OFDM PHY..
- Chair opens floor to Discussion..
- Examine Annex J Clauses.. discussion about differentiation of 5 GHz PHY from that of 3650 PHY
- Discussion to be continued during Thursday AM slot about Mobile Service Enablement..
- Brief discussion of referencing 05/0340r0 on how to not interfere
- Chair calls for Recess until Thurs 10:30AM meeting

**Thursday, July 20<sup>th</sup> 10:30AM Proceedings**

- Meeting called to order 10:36AM
- Chair notes attendance of members of 802.18 group
- Amend to include 06/0955r2 in minutes when finished.. CLARIFICATION: Chair incorrectly states that 955r2 should be used for possible draft.. In fact 0955r1 (which was posted to the 802Server Tuesday) was the document placed on the server more than 4 hours before Thursday meeting times. (note only that the Limit Set edits (fix entry 9, add 10) are needed to use 06/0955r1 for this purpose)

**MAC and Mobile Enablement Discussions**

- Discussion of 06/0864r2 as possible starting point fo normative text
- Discussion of 06/0867r2 Page 4..
- Part 90 restrictions discussed.. (page 4 & 5 of 06/0867r2)
- Discussion of the semantics of STA enablement
- Discussions of Interference and Sensing
- Discussion of language in FCC-05/56 and Eldad suggests that analysis or modeling is needed to assure proper engineering practices owing to the implied EIRP and the issues associated with aggregation of signals and resulting interference
- Discussion of handshake verses enabling beacon and how they differ..

- Discussion of interference that is possible with non-grandfathered C-band ground stations above the 3650 band.
- Steve Shellhammer suggests that usage examples might be called for to understand possible Interference scenarios
- Move to 06/0864r2 and also discussion material from 06/0867r2
- FCC lic. form location info is in NATDUM format.. Beacon contents will be include Height about ground in meters.
- Discussion of the process of UDE ie Mobile enablement of STA's
- "Shalls" will control such operations (agreement bit)
- LCI will be reported to full resolution available (which is 34 bits for Lat/Long, and 30 bits for Altitude)--law states only one meter resolution is required as stated in FCC 05-56 (or is it 04-151)
- Privacy of LCI report mentioned but transparency is important in an Interference context
- Discussion of Annex A, Sections 7.3.2.36 & 11.11 & 17.3.6
- Discussion of MIBs contents.. (derived from 11k but now modified to handle 3650 band operations)
- Discussion of Frame detection vs CCA
- Discussion of 06/955r1 vs 06/955r2.. CLARIFICATION: Note that chair states that he was not correct in the requirement to use r2 of 0955. r1 of 0955 can be used as only the Limit Set edits (fix entry 9, add 10) are needed to use 06/0955r1. 06/0955r1 was submitted to the server Tuesday PM which was well before the 4 hours needed before afternoon Thursday session.
- Discussion of 17.3.10.5 CCA from 06/0955r1
- Discussion of optional rate info (page 792 from REVma redline PICS info..)
- Clear Channel Assessment discussion (Clause 17 of REVma)
- Reference to CCA/ED discussion from Tuesday AM, Page 9 top of 06/955r1
- Chair calls for recess until Thursday PM2 time slot

### **Thursday, July 20<sup>th</sup> 4:00PM Proceedings**

- Chair calls session to order at 4:12PM.. Late start owing to Chair computer problems
- Rich Kennedy volunteers to projects Donald Eastlake's slide deck 06/1028r0 for Chair
- 06/1028r0, slides 4 & 5, outlines of the process that TGy has undertaken
- Chair solicits continued feedback like that of the morning meeting proceedings on the need to back up concepts outlined in 06/955 & 06/864 with sound engineering simulations, lab testing, and field experiences.
- General agreement that sensing and co-existence measurements and modeling are called for.

- To be able to measure and react to the regulatory requirement is needed as per C-Band discussion from morning session
- Discussion of regulating on band edges (how fast is the roll-off at band edges: What will it be and what does it need to be)
- Discussion of Schedule over next meetings (wrt draft, and likely time tables for normative text)
- Review of meeting minutes from this Plenary's prior proceedings
- Review of attendance 19 for PM2
- Return to scheduling discussion and PPT deck (06/1028r0) to talk about TGy Schedule until next Plenary
- Chair asks if a Straw poll is needed to choose a time for bi-weekly teleconferences at 1300 hrs Eastern Time on Tuesdays.
- Not needed as all agreed on 1300 hrs
- Chair asks for motion to adjourn is there is no other business.

**MOTION:** Chair asks for motion to adjourn

**Mover:** Dan Lubar

**Second:** Amit Bagchai \*\*

**MOTION APPROVED**

\*\*Seconder was not a voting member Stuart Kerry 2<sup>nds</sup> the Secunder and motion carries by general consent

## References:

### Regulatory Docs:

FCC 05-56 ( [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-05-56A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-56A1.pdf) )

NTIA TR-99-361

FCC Part 2.106

### IEEE 802.11 Drafts (in IEEE Member Area)

P802.11-REVma-D6.pdf

P802.11-REVma-D7.0-redline.pdf

802.11k-D4.0.pdf

### TGy Reference Docs: (in ftp.ieeewirelessworld.com)

11-06-0571-00-000y-cbp-tg-telecon-minutes-19-april.doc

11-06-0607-00-000y-TGy-telecon-minutes-3May.doc

11-06-0668-01-000y-3650-3700-mhz-fcc-action.ppt

11-06-0680-01-000y-may-chairs-report.ppt

11-06-0740-00-000y-joint-tgy-rr-tag-may-minutes.doc

11-06-0855-03-000y-Annex-and-J-3650-MHz-band.doc

11-06-0863-02-000y-tgy-june-14th-2006-conference-call-minutes.doc

11-06-0864-02-000y-3650-mhz-mobile-service-enablement.doc

11-06-0867-02-000y-references-mobile-service-enablement.doc

11-06-0873-00-000y-tgy-june-28th-2006-conference-call-minutes.doc

11-06-0922-00-000y-tgy-july-11th-2006-conference-call-minutes.doc

11-06-0955-01-000y-ofdm-phy-3650-mhz-band.doc

11-06-1023-00-proposal tgy.ppt

11-06-1024-02-tgy-july-chairs-report.ppt

11-06-1120-00-000y-Minutes-from-San-Diego-Plenary-2006.doc (this document)

Other Related References

11-06-1028-02-000s-tgs-process-july.ppt

**IEEE P802.11  
Wireless LANs**

**Minutes of WNG SC July 2006 Session**

Date: 2006-07-19

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**Abstract**

Minutes of WNG SC meeting held during the IEEE 802.11 interim session in San Diego, California, USA from July 17<sup>th</sup>-21<sup>st</sup> , 2006.

**Contents**

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 WLAN for next generation AV : Motion for SG Creation .....4

## **Executive Summary**

- |   |              |
|---|--------------|
| 1. 802.11 amendments to support CE Applications: Technical Requirements | 11-06-0898r2 |
| 2. Layer 3 based MESH networking  | 11-06-0916r1 |
| 3. MIMO-OFDM Beamforming  | 11-06-0979r0 |
| 4. Multi-media challenges for IEEE 802.11                               | 11-06-0892r1 |
| 5. WLAN for next generation AV : Motion for SG Creation                 | 11-06-1021r1 |

## **Morning Session Tuesday 08:00 – 10:00**

### **Logistics**

WNG SC (Wireless Next Generation Standing Committee) Meeting called to order by Al Petrick at 08:00.

67 people in attendance.

The IEEE 802 & IEEE 802.11 Policies and Rules were reviewed.  
Patents and By-laws read out by Al Petrick, together with licensing terms and associated conditions.

The agenda was reviewed (11-06-0944r2). No comments were raised.

Agenda approved  
Move to approve agenda: Stephen McCann  
Second: Mike Ellis  
Unanimous

The minutes from the May 2006 meeting (11-06-0945r0) were reviewed. No comments were received.  
Move to approve minutes: Hong Cheng  
Second: Stephen McCann  
Unanimous

### **802.11 amendments to support CE Applications: Technical Requirements 11-06-0898r2, Scott Lee**

This document discusses consumer electronic (CE) applications and describes the technical requirements that should be met to provide high quality audio and video contents over IEEE 802.11. It is an revised presentation from 11-06-0655r0, presented in May 2006.

There is a trend for more and more CE devices which now support wireless connectivity (e.g. home theatres, game consoles, Digital TV, Set Top Box). Document goes on to discuss many WLAN CE applications and discusses the adoption of DRM.

Q: What does broadcast multimedia mean (IP packets, video data?)

A: It means the video data itself.

PMP (portable multimedia players) are now becoming very popular in places like Korea and in the future it is hoped that these devices will be wireless devices.

Media Stream Mapping is regarded as a important idea. This basically adds prioritization to data packets, which are different from those proposed in 802.11e.

The presenter would like to support the creation of a new AV (audio video) study group to take this work further.

Q: Can voice be included as one of the applications

A: Yes

Q: Do you expect to be backward compatible with legacy devices regarding time synchronization.

A: Yes and indeed this is very important.

Q: There do not appear to be any technical solutions here. A big issue for carriers is how to the transport streams vary for different applications. Do you know how this will be solved?

A: I don't really have any answers for this. We realize that there are many companies who are producing their own solutions to this. Let's see what the study group can achieve.

Q: Will you change the PHY and/or the MAC.

A: Not sure, but it may be necessary to change the PHY. Again it's up to the study group to define this. However legacy device support is very important.

Q: So you will define a new MAC?

A: Yes, it will be a new 802.11n based MAC. Extra features need to be added to it.

Q: So it will be modified 802.11n MAC? So it may be useful to present your ideas to WNG

A: Ok, so we thought it may be easier to have a study group to look at this.

Q: I have an issue with the scope of this study group, as I think that other technologies than IEEE 802.11 which may be used in the home. Hence perhaps it should be addressed at a higher level than IEEE 802.11. The scope should be broadened.

A: Ok, sure.

### **Layer 3 based MESH networking : 11-06-0916r1, Mineo**

Work also related to IETF activities (e.g. MANET, MASE) and they have several internet drafts already.

This submission presents the work of various Japanese universities and groups, within the project "next generation ad hoc network base technologies". They have developed a test bed demonstrator across the university with more than 50 nodes.

There solution for mesh networking is called M-WLAN (Multihop WLAN). The routing protocol used is OLSR. The submission shows the equipment used in the trials and some results of the system. The paper presents some results for handovers using this system.

### **MIMO-OFDM Beamforming : 11-06-0979r0, Cong Shen**

Detailed submission looking at a beamforming technique, showing mathematical techniques to solve and reduce the output matrix values.

### **Multi-media challenges for IEEE 802.11 : 11-06-0892r1, Mike Ellis**

The submission looks at AV networks and also some of the requirements in the TV production studio, with typically 6-12 High Definition cameras. It must be remembered that a camera control channel is also required.

TV studios are quite attractive for MIMO system, but unfortunately outdoor locations are completely different environments and up to 40 channels may be required.

Delay is absolutely critical in TV studios and should not be more than ~30ms, which is quite difficult to achieve. Paper suggests that only 1 suitable TGN channel can be used within the 2.4 GHz band for the TV studio. It states that TGN is not very suitable for this application, as there is a lot of overhead on the channels. Indeed a more flexible type of QoS is possibly required.

Realise that IEEE 802.1as (audio video bridging) is an interesting group to work with.

Q: There are strict synchronization issues here. How will it cope with legacy equipment?

A: Yes, it must be backwards compatible. This is the role of a future study group. In the home single hop techniques will be used, but outdoors multi-hop may be used.

Q: Yes, but then a controller would be required.

A: The solution may not be that simple.

Q: Your references should also point to delay and jitter standards within the ITU. How are you going to meet these? Especially for studio quality video. Have you considered digital satellite news gathering?

A: Not very familiar with satellite issues.

## **WLAN for next generation AV : Motion for SG Creation : 11-06-1021r1, Todor Cooklev**

Presentation about the motivation and objective behind the proposed audio visual study group. It is felt that such extensions to IEEE 802.11 will allow it to play a major role in the entertainment industry.

The ITU has just established a group looking at home networking, examining all wired solutions (but not wireless).

### **Straw Poll**

How many people would participate in a AV study Group if it were established?

Result : 37

### **Motion**

Move that the WNG SC recommends that the IEEE 802.11 WG form a Study Group to examine WLAN amendments for next generation Audio/Video applications, with the goal to assess the creation of a new TG .

Comment: We need to have questions about this first.

Q: What is next generation audio video is?

A: Not sure what this means.

Q: Is this beyond HD (High Definition) video?

A: Next generation AV is a general term, and should be discussed within the study group. It is perhaps not a very accurate definition at the moment. The user requirements and experiences define what next generation actually means.

Comment: The detailed definition of next generation AV is not important.

Q: But what is the scope?

A: It is not important.

Q: Perhaps it better to consider the requirements at this stage, and not the solutions. The focus should be requirements for IEEE 802.11 technology only.

Q: It would be more useful if you can tell us about which aspects of 802.11 need to be changed.

A: Regarding narrow the scope, it can be restricted to the MAC only?

Q: Are you sure, just the MAC, and not the PHY?

A: I think its just going to be the MAC.

Comment: This is not a task group, this is just a study group. The starting point is 802.11. It may decide that 802.11 is not a suitable technology.

Chairman: Move to extend WNG for a further 10 minutes.

No objection noted.

Chairman: Also please not that everyone can vote in WNG and is procedural requiring 50%.

Back to the motion

Moved: Todor Cooklev

Second: Guido Hiertz

Discussion

Comment: This is too general and I have problems with the language. Which WLAN amendments are you talking about and why do you need to mention the goal of a new TG.

Comment: I agree that although the words are unusual, the essence of the motion is fine. I speak in support of the motion.

**Motion to amend the text**

Move that the WNG SC recommends that the IEEE 802.11 WG form a Study Group to examine WLAN limitations and recommend appropriate amendments for improved 802.11 performance in support of multimedia applications including Audio/Video, with the goal to assess the creation of a new TG.

Moved: Todor Cooklev

Second:

Chairman: We are now in recess until Wednesday. The motion to amend is still on the table.

---

## **Morning Session Wednesday 11:30 – 12:30 (Part of IEEE 802.11 mid-week Plenary)**

Meeting called to order by Al Petrick.

He pointed out that everyone within this assembly can vote on WNG SC issues. He then reviewed the initial WNG SC session on Tuesday and explained about the state of the motions, that were on the table at the end of this session.

### **Motion to amend (level 1)**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN by multimedia applications in the consumer electronics market and to identify relevant improvements outside the scope of existing 802.11 Task Groups, with the intent to create a PAR and five criteria to form a new Task Group.

Moved by: Todor Cooklev

Seconded: Charles Cook

Comment: There is some new text. Can we also have some review of what is going on here  
Chairman: No, we are in the middle of a motion to amend.

Q: Please can the chair verify that it is just the bold text in the motion to amend that we are discussing.  
Chairman: Yes

Q: Doesn't this fall within the scope of TGT  
Chairman: We are in a motion to amend.

Q: Can we add in the words "real time" in the amendment.  
Chairman: No, it is now on the floor.

Q: Why is this just addressing the consumer electronics market  
A: This is just a friendly amendment and we're just trying to formulate the motion properly.  
Chairman: No, it is now a full motion

Q: Can I move another motion to amend.  
Chairman: No, as we already have a motion to amend on the table.

### **Motion to amend (level 2)**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN by multimedia applications and to identify relevant improvements outside the scope of existing 802.11 Task Groups, with the intent to create a PAR and five criteria to form a new Task Group.

Moved by: Bruce Kraemer

Second: Roger Durand

Discussion on this amendment  
Comment: This seems a reasonable amendment

Approved by unanimous consent

**Motion to amend (level 1)**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN multimedia applications and to identify relevant improvements outside the scope of existing 802.11 Task Groups, with the intent to create a PAR and five criteria to form a new Task Group.

Moved by: Todor Cooklev  
Seconded: Charles Cook

Q: Where are we now.  
Chairman: Back at level 1.

Q: Does this include the baseline IEEE 802.11 standard? Also I thought that wired was going to be included?

A: Yes, definitely the IEEE 802.11 base line document

A: Will it include wired solutions, No.

Q: ok, so why don't we add the baseline standard.

Chairman: We've just approved the removal of the words consumer electronics market and now we are at level 1. So it is order to go down another level.

**Motion to amend (level 2)**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN multimedia applications and to identify relevant improvements outside the scope of existing 802.11 Task Groups and 802.11 standard with the intent to create a PAR and five criteria to form a new Task Group.

Moved: Stephen Palm  
Second: Bruce Kraemer

Comment: Since it is asserted that the current standard does not solve this problem, I request the new words in this motion.

Moved by unanimous consent.

**Motion to amend (level 1)**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN multimedia applications and to identify relevant improvements outside the scope of existing 802.11 Task Groups and 802.11 standard with the intent to create a PAR and five criteria to form a new Task Group.

Moved: Todor Cooklev  
Second: Charles Cook

Comment: I call the question (Ken Clements)

Objection

Moved: Dave Bagby  
Second: Bruce Kramer

Motion to call the question:

Results (for-against-abstain) : 92-2-15  
Motion to amend (level 1) back on the table

Results (for-against-abstain) : 77-10-23

### **Motion**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN by multimedia applications and to identify relevant improvements outside the scope of existing 802.11 Task Groups and 802.11 standard, with the intent to create a PAR and five criteria to form a new Task Group.

Moved by: Todor Cooklev  
Second: Charles Cook

Q: This is very confusing. This appears to create a study group to study things outside of the scope of IEEE 802.11

A: No, this is not the intent. The improvements should be outside of the existing scope.

Comment: This is an non-sensical motion. I speak against this motion.

Q: I think this is in the scope of TGT. I'm not even sure if there is a problem to be solved here. I don't know if the market can cope with more improvements to the IEEE 802.11 MAC.

A: Yes, I know about TGT. The study group will consider future ideas and items outside of the current scope of IEEE 802.11.

TGT chairman: It looks as though this group will study MAC issues for multimedia performance. This is not really the scope of TGT. There does not appear to be any conflict here.

Comment: The TGn MAC may satisfy this. It looks like a re-run of the wireless IEEE 1394 arguments we had a few years ago. Let's wait for TGn.

Comment: I think this group is pre-mature and I speak against this motion.

Comment: I think we already have too many groups within IEEE 802.11 and I think this will encourage too much work within IEEE 802.11

Comment: The measurement of multimedia performance is within the scope of TGT, but not the scope. However, I still think that the motion is pre-mature.

Comment: There have been a lot of presentations within WNG over the last 10 months or so. Please remember that this is WNG SC. I think the wording of the motion is to create a study group. This is not a motion for a new task group. I support the motion.

Q: If this motion fails, what is the situation within WNG?

A: It's up to the membership to come back to WNG and take it forward. It does not kill the potential of going forward with this.

### **Motion to amend**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN by multimedia applications.

Moved: John Rosental

Second: Ken Clements

Move by unanimous consent ? Objection (Bruce Kraemer)

Results (for-against-abstain) : 71-12-18

Call the question

Moved: Ken Clements

Second: David Hunter

Objection to calling the question (Adrian Stephens)

Vote on calling the question:

Results (for-against-abstain) : 91-10-19

**Motion**

Move that the WNG SC recommends that the IEEE 802.11 WG forms a Study Group to examine the performance requirements imposed on WLAN by multimedia applications.

Moved: Todor Cooklev

Second: Charles Cook

Results (for-against-abstain) : 80-42-14

**Orders of the day called**

Chairman: Meeting adjourned.

1  
2

**IEEE P802.11  
Wireless LANs**

**JTC1 SC6 Ad Hoc Committee Meeting Minutes July 2006**

**Date:** 2006-07-18

**Author(s):**

<b>Name</b>	<b>Company</b>	<b>Address</b>	<b>Phone</b>	<b>email</b>
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3  
4

**Abstract**

Minutes of the 802.11 JTC1 SC6 Ad Hoc Committee meeting held during the IEEE 802 July 2006 Session in San Diego, CA from July 16-21, 2006.

5  
6 **Session I, Tuesday July 18, 2006 13:30-15:30, Hyatt – Emma B,C**

7 Meeting called to order by Jesse Walker at 13:31, with Sandy Turner as Recording Secretary.

8  
9 **Document 06/1078r0, Opening Report, Jesse Walker**

10 The Chair reviewed the Membership & Anti-Trust information, per slide 5.

11  
12 The Chair read the IEEE-SA Standards Board Bylaws on Patents in Standards (slide 6) and asked if  
13 everyone understood the Patent Policy. All members understood. The Chair asked if there were any  
14 Letters of Assurance the Chair should be aware of. There was no response. The Chair read the  
15 Inappropriate Topics for IEEE WG Meetings (slide 7).

16  
17 The Chair also went over the Agenda slides on the following:

- 18 • Copyright
- 19 • Goals
- 20 • Status

21  
22 Approved the Minutes of the May 2006 Meeting, 11-06/0786r0, by unanimous consent.

23  
24 The Chair reviewed the detailed proposed Agenda for the week, per slide 12. There were no changes to  
25 the agenda and it was approved by unanimous consent.

26  
27 **Business**

28 The Chair asked but did not receive any new items on our liaison with ISO/IEC JTC1/SC6/WG1.

29  
30 The Chair led a discussion on the future of the Study Group. Key points included:

- 31 • The creation of an information element (IE) followed by a country code, similar to the way we
- 32 allow vendors to administer their own IE, could be handled by 802.11ma.
- 33 • A study group can be created at any time when we receive new requirements.

34  
35 **Motion: Recommend to not renew the JTC1/SC6 Study Group.**

36 **Moved: Clint Chaplin**

37 **Second: Ho-In Jeon**

38 **Vote: 4-0-1**

39  
40 The Chair led a discussion on the future of the Ad Hoc Committee. Key points included:

- 41 • The group should hibernate except when needed.

42  
43 **Motion: Recommend to IEEE 802.11 Working Group Chair that an ISO/IEC JTC1/SC6 Standing**  
44 **Committee be formed, to address issues arising from the liaison relationship with SC6 pertinent to**  
45 **IEEE 802.11, and to dissolve the JTC1 Ad Hoc Committee.**

46 **Moved: Clint Chaplin**

47 **Second: Ho-In Jeon**

48 **Vote: 5-0-0**

49  
50 **Straw Poll: Should we send another letter to SAC and CESI, again inviting them to participate in**  
51 **the IEEE 802 and 802.11?**

52 **Yes - 5**

53 **No - 1**

54  
55 The Chair asked for volunteers for the letter drafting committee. Donald Eastlake volunteered. Jesse will  
56 also check with other JTC1/SC6 Ad Hoc Committee participants to see if they have interest.

58 The Chair recessed until 16:00 on Thursday.

59

60 **Session II, Thursday July 20, 2006 16:00-18:00, Hyatt – Emma A**

61 The Chair convened the session at 16:00.

62

63 The group reviewed and updated document 11-06-1117.

64

65 **Motion: Move to approve the letter in document IEEE 802.11-06/1117r0, to forward to China's**  
66 **SAC, CESI, and MOFCOM**

67 **Moved: Sandy Turner**

68 **Second: Fabrice Stevens**

69 **Vote: 4-0-0**

70

71 The Chair adjourned the session at 16:35.

72

73 Attendees:

74 Clint Chaplin

75 Donald Eastlake III

76 Ho-In Jeon

77 Nelson Liu

78 Masood Pirzada

79 Fabrice Stevens

80 Sandy Turner

81 Dmitri Varsanofleu

82 Jesse Walker

83

84 **References:**