

**IEEE P802.11  
Wireless LANs**

**Minutes for 802.11 Working Group Meetings in Melbourne,  
Australia**

Date: 2006-09-22

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**Abstract**

Minutes for the Joint 802 Wireless opening Plenary and 802.11 WG Meeting Minutes

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Minutes of 802.11/.15/.18/.19/.21/.22

1 MEETING CALLED TO ORDER – by KERRY at 08:06am.

1.1 APPROVE OR MODIFY JOINT MEETING AGENDA - KERRY

Approved without objection by unanimous consent.

1.2 REVIEW AND APPROVE THE JOINT IEEE 802 WIRELESS MINUTES OF Jacksonville (May 2006) SESSION

Approved without objection by unanimous consent.

1.2.1 MATTERS ARISING FROM THE PREVIOUS MINUTES

None.

1.3 SESSION COURTESY NOTICE AND ANTI-TRUST REMINDERS - KERRY

Courtesy reviewed.

Anti-Trust Statement was read to the group and no questions arose.

IEEE Patent Policy will be reviewed later in the meeting..

IEEE Ethics Members Pledge pointed out.

1.4 STRAW POLL OF NEW ATTENDEES -

New Attendees: 8

Attendees in the room approximately: 210

2 FINANCIALS / YTD SUMMARY - 802.11 & 802.15 JOINT TREASURY - BARR

Doc: 15-388/11-1436 was presented:

Treasury: \$16,6870.71 in balances as of today.

Meeting reserves \$203,477 in general -- \$50,000 for the Melbourne meeting specifically.

Low attendees due to 802.20 being in suspension.

257 early registration

67 late registration

Projected deficit currently at (US\$48,325)

This is less than the budgeted \$50k so we are in good shape.

Review the history of attendance since 2003 to 2006 – shows attendance is down.

3 ANNOUNCEMENTS

3.1III REVIEW IEEE, 802 LMSC, 802.11 POLICIES & PROCEDURES –WORSTELL

(See 11-06-430r5)

IEEE-SA Standards Board Bylaws on Patents in Standards Paragraph 6 was read and reviewed.

Revision from Feb 2006.

Anti-Trust Statement was reviewed.

Inappropriate Topics slide was read. (Revised Feb 2006)

Copyright rules were reviewed.

Meeting Etiquette was reviewed.

Standards Compliance Disclaimer reviewed.

3.2 IEEE-SA LETTERS OF ASSURANCE (LOA) - KERRY

(See 11-06-430r5)

Call for any LOA that

Request of any questions on the Patent Policy. No one indicated any questions.

3.3 OTHER ANNOUNCEMENTS - KERRY / ALL

Remember to wear badge and secure own personal equipment.

Help Desk for the network is at the IEEE 802 Registration desk

4 SUMMARY OF KEY WORKING GROUP / 802 EVENTS / ACTIVITIES

4.1 REVIEW INTERIM SESSIONS - HEILE 08:25

Next Interim Meetings

4.1.1 JANUARY 2007 - London, United Kingdom

4.1.2 FUTURE INTERIM SESSION LOCATIONS:

4.1.2.1 MAY 2007 - Montreal, Canada

- 4.1.2.2 SEPTEMBER 2007 - Big Island, Hawaii, USA
- 4.1.2.3 Jan 2008 looking at Asian venues with all 802
- 4.1.2.4 May 2008 back at Jacksonville
- 4.1.2.5 Sept. 2008 looking at Monterey venue

4.2 REPORT ON EXCOM ACTIVITIES AND PLANS INCLUDING NEW PARS -- KERRY  
 .11k PAR was approved by IEEE NesCom/IEEE Standards Board on Sept. 15.

4.3 WIRELESS NETWORK UPDATE - WORSTELL  
 (See 11-06-430r5)  
 Use SSID of IEEE to get to the network.  
 Open Network, and all is working at this time.

## 5 REVIEW 802.11 OBJECTIVES, ACTIVITIES, & PLANS FOR THIS SESSION

(See 11-06-430r5)  
 Review the contacts for Voting issues and badge issues  
 Identify the badge number for quick id usage.  
 Review Voting process – Badge required to vote.  
 Review Conference fee registration issues  
 Recording rules reviewed.  
 Only WG officers may speak to the press on behalf of the WG

- 5.1.1 ONLINE ATTENDANCE RECORDING & DOCUMENT# REQUESTS  
 (See 11-06-430r5)  
 Attendance go to [Http: //Newton](http://Newton) (192.168.168.10)  
 Documents: go to [HTTP:802server.events.ieee.org](http://HTTP:802server.events.ieee.org)  
 Get Doc numbers from [802wirelessworld.com](http://802wirelessworld.com).  
 Also post docs to [802wirelessworld.com](http://802wirelessworld.com)  
 How to get on the reflector was reviewed.  
 Please use the form on the Website rather than the reflector.  
 Process was reviewed and shown.  
 Question on the ID being different this session....On each person's badge is a unique ID for this session.  
 Please remove any confidentiality statement from the e-mails being sent on the reflector.  
 Note that 5 bounces will remove you from the reflector  
 Review voting rights  
 Review How to get voting rights  
 see doc 11-06-0994r2  
 Review the Sign on process for Attendance:  
 Review where to get Documents.

5.1 APPROVE OR MODIFY 802.11 MEETING AGENDA - KERRY  
 Approved without objection by unanimous consent.

5.2 REVIEW AND APPROVE THE 802.11 MINUTES OF San Diego (July 2006) SESSION

5.2.1 MATTERS ARISING FROM THE PREVIOUS MINUTES - ALL  
 No matters  
 Approved without objection by unanimous consent.

5.3 WORKING GROUP REPORTS:

5.3.1 WG VOTERS SUMMARY - WORSTELL  
 See Doc 11-06-0994r2  
 Total Voters 453  
 Potential Voters 26  
 Nearly voters 36  
 Aspirant voters 229  
 18 meetings this week, evening sessions are extra credit

13 of the two hours sessions to get 75% for voting credit.  
Review server locations for attendance and documents again.

- 5.3.2 Status of Wirelessworld:  
Working with the 802EC for 1.5 years, we still have no resolution from them.  
Working with the IEEE IT staff and the IEEE SA IT staff, they are helping provide the attendance software that we are currently using for this session.  
Doc server is barely working, but we are diligently trying to get progress.  
Reminder do not use this for registration or for anything other than getting doc numbers, posting docs or getting docs.
- 5.3.3 WG POLICIES & PROCEDURES UPDATE AND FUTURE ADDITIONS CHECKLIST -  
Harry Reviewed P&P  
The approved P&P that were approved in July have been in the working group general and working group update tabs on the 802.11 web page.  
  
The policies and procedures have had to go undergo a 2 month review to include the recent changes in the 802 P&P and IEEE SA P&P changes. This is scheduled for review at the Nov Plenary meeting.
- 5.3.4 WG PUBLICITY & WORKLOAD TIMELINE PLANNING - EASTLAKE  
updates to Timelines will be announced on Friday.  
All changes to the timeline need to be reported to Donald Eastlake.
- 5.3.5 WG TECHNICAL EDITOR STATUS REPORT & UPDATE - BARBER  
Updated on Internationalation will be given on Friday. In summary g and h are now available in ISO form. E and I are nearly ready.  
Remember the editor meeting on Tuesday AM. Topics for Editors was listed for meeting agenda.
- 5.4 STANDING COMMITTEE REPORTS:
- 5.4.1 WNG SC - WIRELESS NEXT GENERATION - TAN  
Only one session is scheduled  
2 presentations scheduled:  
During the Wed Plenary, it will be a WG interchange, and will have 2 topics: 1 from Adrew Miles: on ISO/IEC updated. 2. presented on behalf of Stephen McCann on TGu.
- 5.5 TASK GROUP REPORTS:
- 5.5.1 TGK - RADIO RESOURCE MEASUREMENTS - PAINE  
Comment Resolution is being targeted and a potential LB out of this session.
- 5.5.2 TGMA - 802.11 STANDARD REVISION - O'HARA  
One last Sponsor Recirc LB will be done to show the final set of comments.  
Two Interpretation requests received and will be processed this week.  
Believe that work will be completed early this week.
- 5.5.2.1 ANA - ASSIGNED NUMBER AUTHORITY  
no open requests at this time
- 5.5.3 TGN - HIGH THROUGHPUT - KRAEMER  
We have meeting times for almost every block.  
Still processing comments  
6000 unique comments were received (3k editorial 3k tech)  
over 1000 have a resolution prepared for voting this week.  
Still have about 1000 comments to resolve before the LB

Breakout meetings will be done this week, but the space location in the convention center is not confirmed. Main room door will have the breakouts posted for location and times. The room updates will be posted to the opening report from Bruce, on the reflector and on the door.

- 5.5.4 TGP - WIRELESS ACCESS FOR THE VEHICULAR ENVIRONMENT- ARMSTRONG  
There is a major rewrite of the draft in light of the last letter ballot and will present it to the TG. There may be a chance that a LB will be issued.
- 5.5.5 TGR - FAST ROAMING - CHAPLIN  
23 comments left to resolve. Plan to finish this week.  
Plan to go to Recirc at the end of this week.
- 5.5.6 TGS - ESS MESH NETWORKING - EASTLAKE  
see tentative agenda posted  
Still working on LB comments, small likelihood to get to LB this week.
- 5.5.10 TGW - PROTECTED MANAGEMENT FRAMES - EASTLAKE  
Walker is not present, so Donald presented report that the agenda is posted
- 5.5.7 TGT - WIRELESS PERFORMANCE - WRIGHT  
There are 6 mtg blocks this week  
Finish processing the comments  
Looking for LB out of the Nov Meeting.
- 5.5.8 TGU - INTERWORKING WITH EXTERNAL NETWORKS - MCCANN  
Stephen McCann is absent, so Harry W. is reporting/standing in for  
TGu will review the Vision statement.  
Review the down select  
5 presentations and a joint mtg with .21  
Review the Timeline for preparations for Nov Mtg.
- 5.5.9 TGV - WIRELESS NETWORK MANAGEMENT - CALHOUN  
there will be about 11-12 presentations this week.  
Latest agenda is in 1430  
No LB will be done this week.
- 5.5.11 TGY - 3650-3700 OPERATION IN USA - ECCLESINE  
Regrets he missed plane and will arrive at 9:30 to Melbourne  
RR-TAG at 10 am on Tues to discuss their FCC visit 7 Sept. and ExParte  
See docs 11-06-0995r2 and 11-06-0864r3 for Agenda and topics.
- 5.6 ADHOC GROUP REPORTS:
- 5.6.1 JTC1-SC6 AHC - ISO/IEC JTC1-SC6 - WALKER  
Hibernating
- 6 802.15 WIRELESS PERSONAL AREA NETWORKS WORKING GROUP - HEILE
- 6.1 WG VOTERS SUMMARY - HEILE 1 09:18  
Voters 168  
Nearly 29  
Apirants 116  
Non-voters: 1244 (anybody that has signed in over the last 9 years)
- 6.2 STANDING COMMITTEE REPORTS:
- 6.2.1 WNG SC - WIRELESS NEXT GENERATION -- SCHYLANDER
- 6.3 TASK GROUP REPORTS:
- 6.3.1 TASK GROUP 3B - ALTERNATIVE PHY -- BARR

3B has completed and is published.

- 6.3.2 STUDY GROUP 3C - MILLIMETER WAVE - FISHER  
several Time blocks meeting  
working on channel modeling and umb doc and call for proposals
- 6.3.3 TASK GROUP 4A - ALTERNATIVE PHY - KINNEY  
on behalf of Pat Kinney, ---- will chair the meeting.  
Sponsor ballot comments will be reviewed.  
Wed afternoon meeting times will status update  
Alternate PHY for 15.4 (Chip technologies)
- 6.3.4 TASK GROUP 4B - ALTERNATIVE PHY - NAEVE  
Published.
- 6.3.5 Task Group 4C will not meet this week
- 6.3.6 Task Group 4D  
First meeting this week looking at new band for China
- 6.3.7 TASK GROUP 5 - MESH NETWORKING - LEE 2 09:41
- 6.3.8 Interest Group: Body Area Network -- Art Astrin  
looking to create a SG

- 7 802.18 RADIO REGULATORY TECHNICAL ADVISORY GROUP ACTIVITIES & PLANS  
- LYNCH 5 09:24
- 7.1 TAG VOTERS SUMMARY  
See Doc 18-06-0057  
Total Voters: 20  
In July there looked like limited topics, but then had 2 responses that were sent out to ITU-R on M.1450  
Reviewed and commented on U.K. OfCom Higher power limits for unlicensed bands  
Reviewed and commented on New Zealand Broadband
- This week:  
Review/update status if ITU-R M.1450  
Review FCC notice on use of TV "White Space"  
Review Actions taken after Aug conference call  
Presentation to FCC  
Other agenda topics  
Joint meeting with .11 TGy  
Prepare response to FCC on 60 Ghz Issues
- Reminder that there is a need to have participation from all areas and you will still be able to retain voting rights in home group.
- 8 802.19 COEXISTENCE TECHNICAL ADVISORY GROUP ACTIVITIES & PLANS -  
SHELLHAMMER 5 09:29
- 8.1 TAG VOTERS SUMMARY  
Tag has 19 voting members  
See 19-06-35r0 for opening report  
July Summary Given:
- Plans for this week:  
11n has updated the 11n CA doc and will be reviewed in Nov.  
TAG will discuss Coexistence scenarios  
Local sever does not have docs. Steve will check on it.
- 9 802.21 MEDIA INDEPENDENT HANDOVER INTEROPERABILITY WG ACTIVITIES &  
PLANS - GUPTA 5 09:32
- 9.1 WG VOTERS SUMMARY  
see doc 21-06-744  
voters: 72  
nearly Voters:8  
Aspirant Voters. 32  
Meeting Plan  
14 Meeting blocks to gain voting credit.  
Summary of completed Work (see slide 5)  
Objectives for Sept. meeting (see slide 6)  
Questions:  
The joint meeting on Tues will be held in .21 Meeting room which is Corryong 2 on level 2.
- 10 802.22 WIRELESS REGIONAL AREA NETWORKS WORKING GROUP ACTIVITIES &  
PLANS - STEVENSON 5 09:58
- 10.1 WG VOTERS SUMMARY  
Opening Report given Doc 22-06-0185r0  
Status given See slide 2

WG Reviews are being held and are using the comment ballot tool as an exercise to learn how the tool will work and to educate the membership in using the tools.

TG1:

Has final proposal presentations/downselect scheduled  
Continue to advance the work of the AdHoc groups and gain WG approval of their recommendations:

Spectrum Sensing AdHoc

Geolocation /database AdHoc

802.22.2 PAR approved will hold organizational meetings for TG2 this session  
election of officers in Oct or Nov.

WG is looking for Technical Editor

Status: 65 Voters

222 the total number that have signed in for at least one slot

Potential voters: 30

First time in .21 history there will be some parallel meeting slots.

See Doc 22-06-163r2 for the agenda and graphic.

11 JOINT INTER-CHANGE SESSION FOR GROUP DISCUSSION / ALIGNMENT OR WG /  
TAG DISCUSSION

1.1 "JOINT INTER-CHANGE ITEMS"

None:

Joint Meeting Adjourned at 9:45.

WG session recessed till the respective times later in the week.



## 802.11 MID-SESSION PLENARY AGENDA –

Wednesday, September 20th, 2006 - 10:30-12:30

- 1 802.11 MEETING CALLED TO ORDER by Stuart Kerry at 10:35am  
Approximately 147 people in the room at the start of the meeting.
- 1.1 APPROVE OR MODIFY 802.11 WORKING GROUP AGENDA  
Changes to agenda discussed.  
Joint interchange not a WNG session for second hour of this meeting block:  
Emergency Call and IEC discussion  
R2 graphic was displayed.  
TGm has completed for the week and released their rooms  
TGv will release Wed  
TGw closed this morning,  
TGr has been added Wed PM1  
TGs add Wed PM2 and Thurs PM1  
TGk add Thurs PM2  
TGn has adhoc breakouts that are posted on the door  
No objection to agenda changes. R2 is official Agenda as of Wednesday.
- 2 ANNOUNCEMENTS
- 2.1 IEEE-SA LETTERS OF ASSURANCE (LOA)  
Request of any LOAs that the Chair should be made aware of.  
Request for any information regarding the Patent Policy
- 2.2 THURSDAY NIGHT WG CHAIRS ADVISORY COMMITTEE  
MEETING @ 19:30 PM - ALL CHAIRS / VICE-CHAIRS  
Reminder to get info to Donald be end of today.
- 2.3 ATTENDANCE RECORDING - WORSTELL  
If you had an issue let Harry know.
- 2.4 OTHER ANNOUNCEMENTS - KERRY / ALL

The chair announced LB86 results:

LB86:

Approve	325	85%
Do Not Approve	59	15%
Abstain	44	10%
Return Ratio:	83%	
Total Votes:	428	

TGk is holding a couple of votes this afternoon (during PM2) at 16:15.

- Topics: 1. Noise Histogram mandatory or optional  
2. Parallel Mandatory or optional

- 3 REPORTS FROM LIAISON REPRESENTATIVES
- 3.1 IEEE 802.11 TO / FROM OTHER IEEE 802 WORKING GROUPS
- 3.1.1 BETWEEN 802.11 TO/FROM 802.18 -KUWAHARA  
see doc 1495r1 for report
- 3.1.2 BETWEEN 802.11 TO/FROM 802.19 -LI  
New CA document from TGn was presented in TGn session see 11-06-338r4 and if accepted will be sent to .19
- 3.1.3 BETWEEN 802.11 TO/FROM 802.21 -HUNTER

Stuart Requested that David Hunter check on rights of the .11 members to see into .21 which has currently been lost.

See doc 1445r0 for report that was presented:

- 3.1.4 BETWEEN 802.11 TO/FROM 802.22 -"OPEN POSITION"  
No one volunteered, so this will be removed from the list of Liaisons.
- 3.1.5 BETWEEN 802.11 TO/FROM 802 ARCHITECTURE GROUP- MYLES / DURAND  
No Architecture meeting during this Interim. The next meeting will be at the Dallas Plenary.  
Interested folks are requested to see 11-06-1065r0.  
StrawPoll:  
Does the 802.11 WG believe either the 802 Architecture Group or the 802 wireless Architecture subgroup provide Value?  
Discussion:  
Observation that the Architect Group is requesting requirements that are not physically possible.  
Observation that while we have not had any benefits from the current group, but going forward will it be possible to create any value. Andrew said that if the first Question is No, then the next question would be to ask if any group going forward could provide the benefit.

Yes: 0

No: 45

A request for a reflector discussion on possible alternatives will be conducted going forward.

- 3.2 EXTERNAL LIAISON REPRESENTATIVES
- 3.2.1 BETWEEN 802.11 TO/FROM WI-FI ALLIANCE -CHAPLIN (Pro-Tem)  
See Report given 1514r0:
- 3.2.2 BETWEEN 802.11 TO/FROM IETF -STANLEY  
See Report given 1512r0
- 3.2.3 BETWEEN 802.11 TO/FROM JTC1-SC6 -CHENG / WALKER  
No Report (first call )
- 3.2.4 BETWEEN 802.11 TO/FROM 3GPP -DEMEL  
No Report – Ms. Demel has resigned (first Call)
- 3.2.5 BETWEEN 802.11 TO/FROM TIA -SHARON  
See Report given 1406r0  
Request for assistance of getting 802.11 activities into the 449 band.  
Can we get 802.11 requirements included in the requirements that TIA are using.
- 3.2.6 BETWEEN 802.11 TO/FROM 3GPP2 -"OPEN POSITION"  
No Report – will be removed from the list of Liaison

Reminder given of the Social tonight: Remember to be in lobby at 18:30.

- 4 WORKING GROUP JOINT INTER-CHANGE SESSION FOR GROUP DISCUSSION / ALIGNMENT 4.1  
INTRODUCTION - TAN started 11:24
- 4.2 Presentation 1504r0 from Stephen McCann  
Tk Tan presented the presentation in place of Stephen who was not in attendance.  
This is the same topic that was mentioned by Ms. Stanely in her report.  
Another submission of 11-06-0864r3 from TGy that also addresses this topic.
- 4.3 Presentation 11-06-1502r0 Andrew Myles  
Title: **Review of ISO/IEC 8802-1 collaboration agreement between ISO/IEC JTC1/SC6 and IEEE 802**  
Review of International Standards process

Review of choices that have been made in the past about International Standards

Look at possible future choices and options

What are the real goals for 802

Review of past issues that have caused concerns

What recommendations are being considered?

SC6 process reviewed.

Note that 802.1 for example does not submit to ISO

What are the agreement for how to deal with new issues going forward.

We need to provide consideration on ownership and control of our standards

Discussion and Questions:

Is it correct that the EC is looking to create a policy that is applied consistently to all groups? Or is it the intention to allow the policy to be applied or not to the various WG.?

In the Past, the WG could deal with the path as they wanted, but going forward the same model of allowing WGs to choose would most likely be allowed.

Request from the floor to ask that we keep the ability to choose the International path that we would like to follow.

Is there a specific recommendation to add a US representative to the ISO committee as currently we are submitting standards on a friendly agreement in the UK . If the current representative were to change jobs, there would be no formal way to submit in the future.

It is a good point and needs to be considered.

In the past, HiperLan went through the process and the 802.11 did not contest that as a competing standard, You are suggesting that that will continue, but rather we are concerned with changing our own standards.

That is correct.

Concern that if we move out of ISO, would someone else move into the vacuum?

That is a possibility.

What about the current status of the Copyrights if we were to pull out?

For now, it is believed that the IEEE would retain the rights

There is a formal process that could be used, but we have been using an informal one that is concerned with submission. One of the points to follow up on is that the formal process will be followed more as it is more properly defined.

How do we get this back to the ISO committee?

The feedback will be sent to Robin Trasker the UK rep.

It was noted that the ISO members are allowed to vote in the Sponsor Ballots.

StrawPoll:

1. The 802.11 WG recommends to the 802.11 WG Chair that he approve the proposed submission to SC6 that is documented in 11/1502?

Yes: 80 No: 0

Question: What does it take to get IEEE to become recognized as "International Standard"?

Andrew: I don't know the answer for certain, some believe that this is in the eyes of the beholder.... some believe that we are already, and others that we are not. The IEEE SA Chair is working on this issue.

Other feedback is welcome to go to Stuart who will provide it as input to the 802 EC ballot/poll that opened yesterday. It is a ballot that is destined to collect input to be sent out by the 27<sup>th</sup> of Sept.

4.4 CONCLUSION - TAN started 12:02

- 5 OLD BUSINESS INCLUDING BUSINESS FROM MONDAY PLENARY
- 5.1 None
  
- 6 NEW BUSINESS
- 6.1 None
- 7 Recessed until Friday at 12:03

802.11 CLOSING PLENARY - Friday, September 22nd, 2006 - 08:00-12:00

1. 802.11 MEETING CALLED TO ORDER - Stuart Kerry at 08:11

Approximate Attendance: 85

1.1 APPROVE OR MODIFY 802.11 WORKING GROUP AGENDA

No modifications needed, no objections to current agenda

2 ANNOUNCEMENTS - Kerry

2.1 IEEE-SA LETTERS OF ASSURANCE (LOA) - KERRY

Call for any LOA or questions on Patent Policy. No response from audience.

2.2 WG, TG, SG, SC, AHC CHAIRS SESSION MINUTES & REPORTS TO WG SECRETARY

- CHAIRS / WG SEC ALL CHAIRS SEE WG CAC INFO TAB BELOW

Reminder for the CAC group given

2.3 TENTATIVE OBJECTIVES & AGENDAS FOR NEXT WG SESSION TO WG CHAIR -

ALL CHAIRS

Due Oct 6

2.4 BETWEEN MEETING CAC CONFERENCE CALLS #1 & #2 - ALL CHAIRS

Please review timeline and schedule

2.5 WEB SITE POSTING OF TENTATIVE OBJECTIVES & AGENDAS

Note the schedule

2.6 FINAL REVISIONS OF OBJECTIVES & AGENDAS TO WG CHAIR

2.7 OTHER ANNOUNCEMENTS - KERRY / ALL

No other announcements

3 REVIEW OBJECTIVES, ACTIVITIES, & PLANS FROM THIS SESSION

3.1 WORKING GROUP REPORTS:

3.1.1 WG DOCUMENTATION UPDATE - WORSTELL

IEEE staff have helped with the Attendance software

IEEE staff hope to have new Doc system by Nov Plenary

Plan to remove Wireless World as soon as possible

3.1.2 WG P&P & FUTURE ADDITIONS CHECKLIST CLOSING UPDATE

Updates to our P&P that need to be done to come inline with the 802 P&P.

These will be brought to the Nov Meeting

3.1.3 WG PUBLICITY & WORKLOAD TIMELINE CLOSING UPDATE -

TGk no updates

Simon had received an updated Timeline from Donald, and so Simon projected.

Harry became chair of the meeting to allow Stuart a chance to get material from an e-mail.

The New Timeline was projected and each chair validated the dates.

TGm -- change Final WG approval in Nov, EC in Nov, RevCom Approval in Dec and Pub in Jan.

TGn no changes

TGp changes were made, and sent in and are in the new timeline

TGr no changes

TGs all changes are included and push LB to Nov

TGT changes were submitted, Revised LB date from Nov to Jan . Included. Included

TGu changes are in the new Timeline – LB pushed out one cycle

TGv Most every date was updated and are included.

TGw no updates

TGy No changes

### 3.1.4 WG TECHNICAL EDITOR STATUS REPORT & UPDATE

Report 11-06-1555 presented.

### 3.1.5 STRAW POLE OF MEMBERSHIP REGARDING THIS SESSIONS LOCATION

Request of how many liked this location: Yes: 37 No: 9

Chair was returned to Stuart

### 3.2 STANDING COMMITTEE REPORTS:

#### 3.2.1 WNG SC CLOSING REPORT & NEXT MEETING OBJECTIVES

Report 11-06-1451r1 was presented.

1 motion will be presented later.

### 3.3 TASK GROUP REPORTS:

#### 3.3.1 TGK CLOSING REPORT & NEXT MEETING OBJECTIVES

11-06-1553 was presented

Note Editor changed from Simon Barber to Joe Kwak

#### 3.3.2 TGMA CLOSING REPORT - OHARA

11-06-1392 is the full report. The abridged report was to be presented, but was not ready. So no report presented at this time, but delayed to present shortly.

#### 3.3.3 TGN CLOSING REPORT & NEXT MEETING OBJECTIVES - KRAEMER

Report in 11-06-1500 was presented. –

Next AdHoc directions were skipped in presentation, but included in report for completeness.

#### 3.3.4 TGP CLOSING REPORT & NEXT MEETING OBJECTIVES - ARMSTRONG

Report in 11-06-1554r0 was presented.

#### 3.3.5 TGR CLOSING REPORT & NEXT MEETING OBJECTIVES - CHAPLIN

Report in 11-06-1547r0 was presented

#### 3.3.6 TGS CLOSING REPORT & NEXT MEETING OBJECTIVES

Stephen Conner gave the report in place of Donald E.

Report in 11-06-1549r0 was presented.

#### 3.3.7 TGT CLOSING REPORT & NEXT MEETING OBJECTIVES - WRIGHT

Report in 11-06-1429r0 was displayed, but minor errors will be corrected and posted as r1.

Presentation changes were pointed out during the presentation.

1 motion on Telcon to come up later.

#### 3.3.8 TGU CLOSING REPORT & NEXT MEETING OBJECTIVES - WORSTELL

The Doc Number of the report that was missing.

Report was presented; a Doc number will be assigned and then posted afterward.

#### 3.3.9 TGMA CLOSING REPORT & NEXT MEETING OBJECTIVES - OHARA

An Abridged version of the Report from 1392r0 was presented.

Included in the report are two Interpretation requests that will be presented for approval in the WG in a motion later in the meeting.

- 3.3.10 TGV CLOSING REPORT & NEXT MEETING OBJECTIVES - CALHOUN  
As Pat C. was not available, Bob O'Hara presented report in 11-06-1552r0.
- 3.3.11 TGW CLOSING REPORT & NEXT MEETING OBJECTIVES - WALKER  
As Jessie W. was not available, Bob O'Hara presented report in 11-06-1494r0.  
A LB motion will be presented in the motion section of the Mtg.
- 3.3.12 TGY CLOSING REPORT & NEXT MEETING OBJECTIVES - ECCLESINE  
Report from 11-06-1466r2 (starting on slide 22) was presented.  
Rich Kennedy was thanked for helping out.

Stuart also made public thanks to Jon Rosdahl for standing in for Tim Godfrey who was not able to attend this week.

#### 4 OLD BUSINESS

##### 4.1 WORKING GROUP MOTIONS:

- 4.1.1 WORKING GROUP GENERAL (If Required) - KERRY  
Motion for authorizing Telcons from now to Nov Meeting.  
New times for TGs, TGT, TGu, TGv, TGw were added to the list of authorised Telcons  
Moved by Harry W., seconded by Richard Paine  
No objection, passed by unanimous consent.

The new sheet will be posted on the website as soon as possible.

##### 4.2 STANDING COMMITTEE MOTIONS:

##### 4.2.2 WNG SC (If Required) -

Motion from WNG:

Move that the WNG SC recommends that the IEEE 802.11 WG form a Study Group to examine DLS operation with non 802.11e Aps and to examine power saving extensions to DLS with the intent to create a PAR and five criteria to form a new task group.

WNG Motion results: Moved Simon Barber, Secon: Menzo Wentnik; Results: 35/1/11

Question on when would the SG first meet. A: after the Nov Plenary

Discussions:

Against the motion: Wait till Nov for better discussion

For the Motion: this is a narrow focus and is a good SG topic

For the Motion: The IEEE is the right place to form this standard, but if the group is not approved, the proposers will take this and create the standard elsewhere.

While I would be in favour of the motion, I am also interested that the group consider this topic and discuss this in a regular Plenary. Can we make a motion to allow a statement to reconsider in Nov?

Chair's response. As we don't have a quorum here, we will be having a motion in Nov to affirm the actions that were taken this week.

If I wanted to defer to a time, can I make a motion of such

Chair's response: If a date/time is not given then it would fall off the table.

Commenter response: While a comment was made about WiFi may do something in the future, from his individual view WiFi has not made any official statement.

Commenter requested that more time is given to discuss this

Commenter, 802.11e is not in the current draft. We should use the proper terms.

Response from Simon: the intent is to QoS extensions, and he explained that his reasons that the lack of support of QoS in Aps is hindering QoS deployments and this SG would look at how to support DLS in light of not having QoS features in the APs.

Simon has a short presentation to help in education.

Commenter: It has been the normal mode to have the WNG hear a lot of presentations prior to starting an SG and to allow various views.

Commenter: WNG SC has heretofore been the place to hear pro and con presentations and discussions on a topic to gather a wide view on a topic. Also, not approving today but rather in Nov will not materially effect the plan of the group as they would not be able to meet prior to that anyway.

No further discussion:

Motion Passes: 48 yes, 4 no, 15 abstain

4.3 TASK GROUP MOTIONS: 9:32

4.3.1 TGK (If Required) - PAINE

Motion: Move to Approve the issuance of a 15 day procedural letter ballot, starting on or after 2006-10-10, asking the question; "do you believe the TG "k" draft 6.0 is technically complete and ready for LB recirculation?"

TGk vote: Hart/Ganesh: Unanimously

No discussion – Note that this motion while procedural will require a 75% affirmative

Motion Passes 44 yes, 0 no, 16 abstain

Motion: WG Motion for Recirc following Proc LB

Believing that comment responses in 06/1510r1, 06/1468r2, 06/1489r2, 06/1529r1, 06/1496r1 and 06/1545r0 and the draft mentioned below satisfy WG 802.11 rules for letter ballot recirculation,

Authorize a 15-day LB recirculation of 802.11k draft 6.0 assuming approval of the current draft by a 15 day procedural LB. Letter Ballot recirculation to conclude on or later than 1006-11-11. Movers from TGk: Hart/Kwak –0 Unanimous

Motion Passes: 53 yes, 2 no, 12 abstain

4.3.2 TGMA (If Required) - O'HARA 8 09:13

Motion: Moved to approve the comment resolutions in document 06/1393r0.

No discussion:

Motion passes: 30 yes, 0 no, 13 abstain

Motion: Moved: to request the chair of 802.11 to begin a fourth sponsor recirculation ballot, using 802.11REV-ma draft 9.0, once lthe 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 November 2006.

Motion Passes: 26 yes 0 no 3 abstain

Interpretation Request was then was projected again to explain the interpretation Request

Motion: Moved to accept document 06/1437r0 as the response to the interpretation request #1.

Discussion: How are the interpretation request statements that an issue is being referred to the WG being collected.

Response from Bob said that these are the first that he is aware of, but no formal tracking is done.

Commentor: Suggestion that a formal way to track these issues was requested.

The Chair said he would take the suggestion and review the Tgma Chair to see what the proper way to proceed may be.

Motion passes 28 yes 0 no 10 abstain



Interpretation Request #2 was projected and reviewed.

Motion: Moved to accept document 06/1438r0 as the response to the interpretation request #2.

Moved on behalf of Tgma

Discussion:

Commenter: as Clause C is not normative, it should not be classified as ambiguous.

Response: The group looked at the fact that there are two different actions described, so that is why the response was prepared the way it was.

Motion passes; 28 yes, 0 no, 9 abstain

4.3.3 TGN (If Required) - KRAEMER

Portland AdHoc – Oct

Motion on behalf of TGN :

Request that 802.11 WG authorize TGN to conduct an adhoc meeting for the purpose of comment resolution in Portland, OR during Tue-Thur Oct. 17-19, 2006.

Approved unanimously in TGN

Motion approved Unanimously.

Dallas AdHoc:

Motion on Behalf of TGN:

Request that 802.11 WG authorize TGN to conduct an adhoc Meeting for the purpose of comment resolution in Dallas TX during Thur-Sat Nov 9-11, 2006.

Approved in TGN: 24 yes 23 no.

Motion Approved: 46 yes 1 no 3 abstain

London AdHoc:

Motion on Behalf of TGN:

Request that 802.11 WG authorize TGN to conduct an adhoc meeting for the purpose of comment resolution in London, UK during the period from Wed. Jan 10, 2007 to Saturday Jan 13, 2007 with confirmation obtained from TGN during the Nov Plenary.

Approved in TGN: 24/21/1

Motion passes: 49-0-2

4.3.4 MI TGP (If Required) - ARMSTRONG 8 09:29

None

4.3.5 MI TGR (If Required) - CHAPLIN 8 09:37

Motion: Moved to authorize a 15-day Working Group Recirculation Letter Ballot of 802.11r draft 3.0 to start no later than 9/27/2006, asking the question “should the 802.11r draft 3.0 be forwarded to Sponsor Ballot:?”

TGR Motion by kapil Sood Second: Jouni Malinen

TGR Ballot Results: 17 yes, 0 no, 0 abstain

Motion passes: 48 yes, 0 no, 3 abstain

RECESS FOR REFRESHMENT BREAK - KERRY at 10:07 to reconvene at 10:30am

Meeting called to order: 10:36

## 4.3.6 TGS - EASTLAKE

Motion on behalf of TGs:

Moved to approve a TGs adHoc Meeting in Munich, Germany, Nov 2-3, to discuss improvement of the TGs Draft.. Vot in TG: 9 yes, 0 No, 6 Abstain

Motion passed unanimously

## 4.3.7 TGT - WRIGHT

Motion on behalf of TGT:

Motion: Move to recommend that the 802.11 WG accept document 11-06/1538r1 as the liaison response to the IETF/BMWG

TGT movers: P. Eccloesine/N. Sharma

TGT results: 7/0/0

Discussion: The letter is in response to the IETF request to see if the work areas are overlapping. TGT has determined that this is not an overlapping issue.

Dorothy has reviewed the letter and as the Liaison would send the letter if this passes.

Motion Passes: 48 yes, 0 no, 1 abstain

## 4.3.8 TGU -Worstell on behalf of TG

Motion:

Move that the IEEE 802.11 Working Group approve liaison letter 11-06/1113r2 to TIA TR 41.4 and request the IEEE 802.11 Working Group Chair Forward the letter to TIA TR 41.4.

Moved in Task group by Dave Steephenson, seconded by Eleanor Hepworth  
TG vote results: 10 approve – 0 do not approve 1 abstention

Motion Passes: 40 yes 0 no 5 abstain

The Liaison was reminded to review and send the letter.

Motion:

Move that the IEEE 802.11 Working Group approve liaison letter 11-06/1128r1 to ETSI TISPAN and request the IEEE 802.11 Workingn Group Chair forward the letter to ETSI TISPAN.

Motion Passes: 34 yes 0 no, 4 abstain

Motion:

Move that the IEEE 802.11 Working Group approve Liaison letter 11-06/1127r1 to 3GPP SA3 and request the IEEE 802.11 Working Group Chair forward the letter to 3GPP SA3.

Moved in Task Group by Elenor Hepworth, Seconded by dave Stephenson

TG Vote: 11 Approve: 0 do not approve 0 abstain

Motion Passes: 38 yes, 0 no 4 abstain

Harry was asked to work with the TG chair to get the letters sent out..

## 4.3.9 TGV (If Required)

None

## 4.3.10 TGW - WALKER

## Motion:

Believing that 802.11w Draft D0.06 satisfies all 802.11 Working Group rules for letter ballot,

Moved that the 802.11 Working Group Authorize a 40-day Letter Ballot Asking the question "Should 802.11w draft D0.06 be forwarded to Sponsor Ballot?"

TGW Moved by Nancy Cam-Winget, Second Fabrice Stevens

TGW Results: Vote 7-0-0.

Discussion on why the draft was not up reved to 1.0 to go to the process.

Response: It was reported that there are no rules to this, but has been a convention that has happened heretofore.

Also remember that the TG had a substitute Chair for the week.

The actual number can be changed, but the specific draft is what is being questioned.

The numbering and the naming of the draft is not german to the subject of the motion. The Chair ask the group to vote on the motion that is as is .

Motion passes: 40 yes, 0 no, 6 abstain

## 4.3.11 TGY (If Required) - ECCLESINE

None

## 4.4 OLD BUSINESS FROM MONDAY &amp; WEDNESDAY PLENARIES

None

## 5 NEW BUSINESS 27 11:31

None

## 6 DT ANY OTHER BUSINESS - KERRY / ALL

6.1 What is the plan for correcting the Wireless World Doc system to allow those that cannot get on the system?

6.1.1 Answer from Harry: As we get the new IEEE solution in place, this will remove the Wireless World system once and for all.

6.1.2 Chair noted that the new system would be on the IEEE site and have the search facilities and tools to allow better access going forward.

6.2 As of Oct. 1, the templates will change for all submissions. Please use the new Powerpoint and Word Templates after that day.

6.2.1 The WG Editor is working to get the templates and the draft styles inline and will work out the issue of the differences.

6.3 Please use the Chair's new address to contact him:

6.3.1 [Stuart@ok-brit.com](mailto:Stuart@ok-brit.com)

6.4 Request to consider using IEEE address domain address for officers and official positions in the WG.

6.4.1 The Chair replied that his address is as such, and while it is an option

6.4.2 Also the Chair noted that the membership list and affiliation will be added to the WG consolidated minutes.

## 7 NEXT MTG: November 12-17, 2006, Hyatt Regency Dallas, TX, USA - 100th Mtg - Plenary

7.1 We started in this Group in Oct 1990.

7.2 We will look to have an event to celebrate; if interested contact Stuart.

8 ADJOURN THIS SESSION by KERRY at 11:10

**Attendance List Not Yet Available**

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**IEEE P802.11**  
**Wireless LANs**

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**Minutes of TGk Melbourne Meeting**

**Date:** 2006-09-18

**Author(s):**

<b>Name</b>	<b>Company</b>	<b>Address</b>	<b>Phone</b>	<b>email</b>
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**Abstract**

This document contains TG 11k minutes from Melbourne Meeting.

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**09/18/06 PM1 Session:**

Meeting called to order at 13:30

1. Meeting called to order at 13:38. Meeting started without an overhead project. Equipment not functional.
2. Chair mentioned that LB86 is officially ON for the next 20 minutes
3. 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
4. Meeting objectives:
  - (a) Resolve LB86 comments in the Melbourne Session (about 240 comments). Have a new draft ready by 08:00 AM on Thursday (9/21/06)
  - (b) Recirculation Letter ballot one more time
  - (c) Target Sponsor Ballot in November 2006
5. Any objection to maintaining comment assignments the same. Joe proposed balancing the distribution
6. Discussed the LB86 following comments 7, 53, 54.
  - a. Comment 7 – task group’s position on parallel bit – it should be left Mandatory
  - b. Comment 53 – definitions heading format to be discussed in tech editor’s meeting Tuesday AM
  - c. Comment 54 – discuss options with Adrian – remove second sentence, change is 0 to is undefined
7. Redistribute comments – Comments on Neighbor Report (9) and QBSS Available Admission Capacity (8) reassigned from Kwak to Hart (rows 24, 30 and 43 from 1366/r3 Overview sheet)

Recess till 15:20

Meeting called to order at 15:20

Discussed the following LB86 comments:

- a. Comment 151 – adopt the commentor’s resolution.
- b. Comment 177 – fix editor’s instruction to explicitly specify how to insert definitions into Draft8.0 .11ma. Do not fix individual definitions – the numbering implicitly designates where they need to be inserted
- c. Comment 208 – Recommend taking this to the working group for a vote (along with parallel bit (7) and Noise Histogram (2,220)).

Recess till 19:30

Meeting called to order at 19:30

8. Brian Hart started a discussion on .11n and Measurement Pilot (Adrian Stephen’s query on the reflector).  
Measurement Pilot is a mini-beacon. Joe Kwak proposed adding a note to .11k stating that elements in the Measurement Pilot are optional. Peter E, mentioned that Measurement Pilot frame size may be prohibitive on slower links.
9. Brian Hart’s Comment resolution
  - a. Comment 57: replace ‘current channel’ with ‘operating channel’.
  - b. Comment 60: What was the intent of the security bit in 7.3.2.37? Ping Bernard Aboba to understand the intent of this bit.

- c Connect 234: Csn we drop the Measurement Pilot Interval field from the Neighbor Report? It was added in Draft5.0 due to Nokia's proposal (643/r2). Render Measurement Pilot Interval in the Neighbor Report to the optional sub-element space. Jari Jokela, the author of the proposal that intended to make the Measurement Pilot Interval element in the Neighbor Report agrees with this resolution.

#### 10. Discussion of Comments 236/241

Comment 236 – Neighbor AP list includes all APs, including rogue Aps. The validated neighbor AP is the set that excludes rogue AP.

Comment 241 – Modify the first sentence in 11.11.5 to be generic and counter the comment referring the commentor to Table 85 which described allowed modes for a STA requesting another STA to make a measurement

Recess till 08:00 AM 09/19/2006.

### **09/19/06 AM1 Session:**

Meeting called to order at 08:00

1. Richard announced an extra slot for TGk. Thursday PM2 session. This session will be used to vote on the latest TGk draft (with LB86 comment resolutions)
2. Motion 1:

#### **Motion for add a slot to TGk**

Move to pick up the 09/21/06 PM2 to do final votes on a draft going to recirculation letter ballot.

Move: Kwak  
Second: Hart  
Vote: 4/0/0. Motion Passes.

3. Recess till 09:50 – Task Group members working on individual LB86 comment resolutions
4. Meeting called to order at 09:50 AM
5. Agenda for PM1
  - a. Richard Paine Comment resolutions
  - b. Approve San Diego minutes

Recess till 13:30 (moved by Hart, Seconded by Ganesh).

### **09/19/06 PM1 Session:**

Meeting called to order ar 13:30

6. Noise Histogram, QoS Metrics and Parallel Measurement features – there are comments asking for making these features optional despite TG vote affirming that they be kept mandatory. Need to get motions ready.
7. Discussed agenda for 09/20/06 (PM2)
  - a. Ganesh Comment resolutions
  - b. Kwak Comment resolutions
  - c. Ecclescine comment resolutions (other than notmative text)
  - d. TG votes on Noise Histogram QoS Metric and Parallel Measurement
8. Motion 2:

#### **Motion to accept the San Diego Minutes**



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The San Diego minutes are in document 06/1037r6

Move: Kwak  
 Second: Hart  
 Vote: 7/0/0. Motion Passes.

9. Motion 3:

Motion to accept the Jul-Sep '06 Teleconference minutes

The Jul-Sep '06 Teleconference minutes are in document 06/1137r5

Move: Hart  
 Second: Kwak  
 Vote: 7/0/0. Motion Passes.

10. Richard Paine's comment resolutions

- a. QSTA/QAP references shall be fixed by following the strategy used by .11ma (QoS STA and QoS AP). Need to discover how to address QBSS
- b. Comment '3' addresses comments from LB83 that were marked by editor as 'cannot do'. Emily has resubmitted these as new LB86 comments. Addressing them will resolve comment-3 as well. 211/221 address the same issue as well
- c. Comment 243 requests reinstating Disassociate Imminent .The TG voted in San Diego to not include it in TGk.
- d. Discuss comment 233

Recess till 15:00

Meeting called to order at 15:02

11. Discussed motions need to address the following comments:

- a. Noise Histogram
- b. QoS Metrics --
- c. Parallel Measurement Capability
- d. Comment 238 --
- e. Comment 239 -- reference the clarification in section 11.

Task Group in recess till 09/19/06 16:00

**09/20/06 PM2 Session:**

Meeting called to order ar 16:00

1. Agenda:

- a. LB86 ballot results
- b. Votes on Noise Histogram, Parallel Measurement bit
- c. Hart Comment Resolutions
- d. Ganesh Comment Resolutions
- e. Kwak Comment Resolutions
- f. Ecclesine Comment Resolutions (figures to be discussed)

2. LB86 results:

514 voter pool  
 325 Approved  
 59 did not approve  
 44 abstain

- 
3. Questions from Joe Kwak – comments assigned to members of TGk that are not in Melbourne – Matta has 5 comments. Joe Kwak will own these comments.
  4. Comments from voters (voted in LB78 and/or LB83 but did not vote in LB86) that did not approve the TGk draft. Do comments that are not part of the NO vote need to be carried forward. Joe argued that these need not be carried forward.

Urge the voters in the list above to review and vote on the draft. If these voters cannot be contacted, their NO votes will stay live till the end of the process.

5. Vote on Noise Histogram (comments from LB86 #2, #218, #219, #220)

Joe, Brian and Chris spoke against the motion

**Motion-4: Motion to change Noise Histogram PICS category from mandatory to optional**

Move: Hansen  
 Second: Ganesh  
 Vote: 10/10/1 (motion failed).

Noise Histogram will remain mandatory

6. Vote on PICS category for Parallel Measurement capability (LB86 comment #7)

Joe, Brian spoke against the motion. James and Chris understand the benefit of parallel measurement capability but seek a means to avoid implementation complexity

**Motion-5: Motion to change the PICS category for Parallel measurement capability from mandatory to optional**

Move: Hansen  
 Second: James  
 Vote: 7/6/1 (motion failed).

Parallel Measurement capability will remain mandatory

7. Brian Hart Comment Resolution (1489r2)
  - a. Comment #13 AP channel report need to be in Probe Response as well
  - b. Comment #57 Current Channel is replaced by Operating Channel. Has impact on .ma using Current Channel
  - c. Comment #217 If .11r comes up with a better definition for reachability, it would fix this issue. Till such time TGk will use the current definition
8. Ganesh Comment Resolution (1468/r0)
  - a. Comment #92 TG feels that ‘consecutive’ frames need to be above the threshold for triggering the measurement report.
  - b. Comment #76 – changing ‘unique’ to ‘different’ does not fix the issue.
  - c. Comment #84 – Definitions of ANPI and IPI. Joe clarified that IPI is a PHY layer power measurement and ANPI is at the MAC layer where the PHY layer IPI values are filtered for instances when the MAC’s virtual CS mechanism indicated that the channel was idle, and averaged. Jokela agreed to have this comment declined.
  - d. Triggered, Autonomous, Triggered Autonomous reports. There are three different types of reports. The spec uses triggered or autonomous in 7.3.2.21. Does it also include

- 
- triggered autonomous. Fixed 7.3.2.21 to include all three categories (Comments #18 and 19). Section 11.11.7 needs to be clarify the differences between these reports
- e. Comment #254: .ma uses wildcard BSSID but does not define it in the definitions clause. That is the reason TGk added a definition to the document. Decline this comment.
9. Peter Comment Resolution (1510/r0)
    - a. Comment 22: What does location mean?
    - b. Comment #27: changed from accept to counter.
    - c. Comment #49: What happens if the requestor's accuracy requirement is finer than what the STA can provide (for location)? Report 0 or provide to the possible resolution? 0 is returned in the report.. Need to discuss further
    - d. Comment 172/174: Counter these instead of Accept
  10. Joe Kwak Comment Resolution (1529/r0)
    - a. Comment #72: 'Blocked' means service not available at a specific AC. Peter suggested removing the special value '254' for blocked AC. Eliminate the term 'blocked'. And accept the comment.

Recess till 09/21/06 AM2 (10:30)

Meeting called to order at 10:00

1. Richard reminded the TG members about the PM2 session
2. Discuss comments 76, 208 and 53
  - Comment 76 -- replace text in 11.11.8.8 to read as follows: If the measurement request included multiple QoS Metrics requests for multiple TIDs, the corresponding measurement report shall include one QoS Metrics report for each unique TID in the request which has been admitted
  - Comment 208 -- See motion below.
  - Comment 53 --
3. Vote on removing QoS Metric (comment from LB86 #208)

**Motion-6: Move to remove QoS Metrics from the next version of the TGk draft.**

Move: Ganesh  
Second: Ecclesine

Discussion:  
Joe Kwak, Brian Hart spoke against this motion.

Vote: 0/8/0 (motion failed).

**QoS Metrics Measurement will not be removed from the next version of the TGk draft**

4. Joe Kwak Comment Resolution
  - a. Comment #215 -- Channel Utilization/Channel Load definitions can be harmonized with two exceptions as described in the comment resolution.
  - b. Comment #216 -- remove Antenna ID from various measurement reports. TGk members see value in retaining Antenna ID. Joe Kwak has a description in the comment resolution (1529/r0) that argues how in some cases Antenna ID may not provide additional information but in most cases, Antenna ID is useful information.
  - c. Comment #238 -- This is the same as comment #197 from LB#83. The comment is declined with the following explanation -- Both Channel Load and Channel Utilization use the same mechanism to determine when the channel is busy. Both NAV and Physical CS must be used together if the channel is busy. The boolean OR of the NAV and the Physical CS busy determines when the channel is busy. One cannot choose either NAV

---

or Physical CS. Choosing only NAV or only Physical CS will not indicate a busy channel. No text change is needed. TGk invites the commentor to present a paper in the Dallas meeting explaining the motivation and benefit of changing this measurement as the commentor suggests.

- d. Comment #240 -- .ma 7.2.3 mandates ordering Gaps may exist in the ordering of fields and elements within frames. The order that remains shall be ascending.

5. Comment Resolution documents

- a. Ecclesine 06/1510r1
- b. Ganesh 06/1468r1 and 06/1480r1
- c. Brian 06/1489r2
- d. Kwak 06/1529r1
- e. Paine 06/1496/r1

6. Vote on Brian Hart's Comment Resolutions

**Motion-7: Move to accept the resolutions for TGk LB86 comments as written in spreadsheet document 06/1489r2 assigned to Hart and to instruct the secretary to incorporate all such resolutions therein into the next version of the comment resolution rollup spreadsheet and instruct the editor to incorporate all such resolutions therein into the next TGk draft**

Move: Hart  
 Second: Ecclesine  
 Vote: 8/0/0 (motion passes).

7. Vote on Kwak's Comment Resolutions

**Motion-8: Move to accept the resolutions for TGk LB86 comments as written in spreadsheet document 06/1529r1 assigned to Kwak and to instruct the secretary to incorporate all such resolutions therein into the next version of the comment resolution rollup spreadsheet and instruct the editor to incorporate all such resolutions therein into the next TGk draft**

Move: Kwak  
 Second: Hart  
 Vote: Unanimously passed

8. Vote on Ganesh's Comment Resolutions

**Motion-9: Move to accept the resolutions for TGk LB86 comments as written in spreadsheet document 06/1468r2 assigned to Ganesh and to instruct the secretary to incorporate all such resolutions therein into the next version of the comment resolution rollup spreadsheet and instruct the editor to incorporate all such resolutions therein into the next TGk draft**

Move: Ganesh  
 Second: Kwak  
 Vote: Unanimously passed

9. Vote on Ganesh's Comment Resolutions

**Motion-10: Move to incorporate the normative text as written in the document 06/1480r2 and instruct the editor to incorporate all such resolutions therein into the next TGk draft**

Discussion: Kwak noted some issues on the normative text that he intends to submit in the next LB.

Move: Ganesh  
 Second: Hart  
 Vote: Unanimously passed

## 10. Vote on Paine's Comment Resolutions

**Motion-11: Move to accept the resolutions for TGk LB86 comments as written in spreadsheet document 06/1496r1 assigned to Paine and to instruct the secretary to incorporate all such resolutions therein into the next version of the comment resolution rollup spreadsheet and instruct the editor to incorporate all such resolutions therein into the next TGk draft**

Move: Paine  
 Second: Hart  
 Vote: Unanimously passed

## 11. Vote on Ecclesine's Comment Resolutions

**Motion-12: Move to accept the resolutions for TGk LB86 comments as written in spreadsheet document 06/1510r1, assigned to Ecclesine and also comment #49 and to instruct the secretary to incorporate all such resolutions therein into the next version of the comment resolution rollup spreadsheet and instruct the editor to incorporate all such resolutions therein into the next TGk draft**

Move: Ecclesine  
 Second: Hart  
 Vote: 8/0/0 (motion passes)

## 12. Vote on Gray's Comment Resolutions

**Motion-13: Move to accept the resolutions for TGk LB86 comments as written in spreadsheet document 06/1545r0, assigned to Gray and to instruct the secretary to incorporate all such resolutions therein into the next version of the comment resolution rollup spreadsheet and instruct the editor to incorporate all such resolutions therein into the next TGk draft**

Move: Kwak  
 Second: Hart  
 Vote: passes unanimously

Recess till 16:00

Meeting called to order at 16:00

## 13. Kwak's deferred comment discussion

## a. Comment #33

**Motion-14: Move to counter CID#33 with resolution "The AP Service Load is renamed to AP Average Access Delay. See resolution CID #158 and CID #157," and instruct the TGk editor to incorporate these changes into the next version of the TGk draft**

Move: Kwak  
 Second: Hart  
 Vote: passes unanimously

## b. Comment #34

**Motion-15: Move to decline CID#34 with resolution "the mathematical expression on page P47L2 is used as a means to describe the required scaling for the Access Delay sub-field. The use of logarithm in the description of the required scaling does not imply any required implementation. An alternate and equivalent description of the required scaling may be defined in a table or by a number of other descriptions. The implementor may choose to implement this scaling in many different ways. Table lookup for scaled values is a low complexity implementation but is not required. Any implementation of the required scaling is allowed. Also**

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see related CID #159,” and instruct the TGk editor to incorporate these changes into the next version of the TGk draft

Discussion: Brian Hart spoke against the motion.

Move: Kwak  
 Second: Ganesh  
 Vote: Unanimously passed

c. Comment #29, #30, #257

Motion-16: Move to counter CID#29, #30, #257 with resolution “as the commenter notes any interference in the BSS which will trigger physical carrier sense would increase the measured Access Delay. This interference is strictly speaking, not a load element. P43L3: change ‘BSS Load’ to ‘BSS Average Access Delay’, here and in all places. P43L3 replace the first sentence of this paragraph ‘BSS Average Access Delay element contains the AP Average Access Delay which is a measure of sevice load in the BSS’. P43L8 change ‘AP Service Load’ to ‘AP Average Access Delay’ here and all places. Also see related Comment Resolution in CID #158. ,” and instruct the TGk editor to incorporate these changes into the next version of the TGk draft

Discussion: Brian Hart spoke against the motion.

Move: Kwak  
 Second: Hart  
 Vote: unanimately passed

#### 14. Motion

Motion-17: Move to post Draft 5.x as interim drafts on the 802.11 Working Group Website

Move: Hart  
 Second: Ganesh  
 Vote: passes unanimately

#### 15. Motion: WG motion to approve a Procedural LB

Motion-18: Move to approve the issuance of a 15 day Procedural Letter Ballot, starting on or after 2006-10-10, asking the question; “Do you believe the TG ‘k’ draft 6.0 is technically complete and ready for LB recirculation?”

TGk: Movers: Hart/Ganesh                      Result: Unanimously passed  
 WG: x/x    Result:

#### 16. Motion: WG Motion for recirculation following procedural LB

Motion-19: Motion in document 06/1435r3 Slide 41

TGk: Movers: Hart/Kwak                      Result: Unanimously passed  
 WG: x/x    Result:

#### 17. Richard discussed summary of Melbourne Interim presentation for TGk

Task Group Adjourns till Nov '06 Dallas, Tx Plenary.

# Report and Minutes of TGm September 2006

<b>DATE: 2006-09-22</b>				
<b>Author(s)</b>				
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# Abstract

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



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## Goals for September 2006

- **Prepare response to two interpretation requests received**
- **Process comments received on the third sponsor recirculation ballot**
- **Adopt resolutions to all comments processed**
- **Begin fourth recirculation ballot, if necessary**

---

# Submissions

- **Submissions**

# Proposed Agenda

- **Consent agenda:**
  - Approve minutes and report from July 2006 meeting (document 06/919r0)
- **Review IEEE Patent Policy**
- **Review interpretation request procedure**
- **Old business**
  
- **New business**
  - Process comments received from third sponsor recirculation ballot
  - Adopt comment resolutions
  - Direct editor to complete draft 9.0
  - Direct WG chair to initiate fourth sponsor recirculation ballot
  - Prepare response to interpretation requests
- **Adjourn**

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# Motion #1 to adopt Agenda

- **Moved: to adopt the agenda**
- **Mover: Johnny Zweig, Guido Hiertz**
- **Passes: unanimous**

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# 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 response was made to the question.**

# 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 adopt the resolutions to the following editorial comments:**
  - 12, 11, 22, 23, 21, 1, 24, 2, 3, 4, 5, 6, 20, 25, 17, and 16
- **Moved: Johnny Zweig, Ariel Sharon**
- **4/0/1: Passes**



## Motion #3

- **Moved: to adopt the resolutions to the following general comments:**
  - 10, 31, 18, and 36
- **Moved: Johnny Zweig, Dorothy Stanley**
- **Passes: unanimously**

## Motion #4

- **Moved: to adopt as the resolution to comment # 9**
  - PROPOSED REJECT.
  
  - The consensus of the task group, working group, and the sponsor group is that the material in Annex N is useful, as there has been no material support for its removal in any ballot. The duty of the working group is to continue to move in the direction of consensus when resolving comments. Annex N describes the functions of an AP using a UML-based syntax to clarify AP function versus common implementations of AP devices.
- **Moved: Dorothy Stanley/Johnny Zweig**
- **3/0/1: passes**

## Motion #5

- **Moved: to accept the suggested remedy as the resolution for comments 13, 14, and 15.**
- **Moved: Johnny Zweig, Peter Ecclesine**
- **4/0/0: passes**

## Motion #6

- **Moved: To accept the following as the resolution to comment #8:**
  - The comment is out of scope for the current ballot. There has been no change in the channelization of any PHY in the 2.4 GHz band. The comment will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.
- **Moved: Peter Ecclesine/Johnny Zweig**
- **4/0/0: passes**

## Motion #7

- **Moved: to adopt as the resolution of comments 38, 29, 30, 33, 32, and 26**
  - Proposed reject.
  - The term QoS, when combined with BSS, IBSS, AP, or STA, is still used in the standard. Only the acronym was removed.
- **Moved: Dorothy Stanley/Jouni Malinen**
- **4/0/0: passes**

## Motion #8

- **Moved: to reject comment #34 with the following resolution:**
  - The term QoS, when combined with BSS, IBSS, AP, or STA, is still used in the standard. Only the acronym was removed.
  - Editor to change "station" to "STA".
- **Moved: Johnny Zweig/Peter Ecclesine**
- **4/0/0: passes**

## Motion #9

- **Moved: to reject comment #27 with the following resolution:**
  - The term QoS, when combined with BSS, IBSS, AP, or STA, is still used in the standard. Only the acronym was removed.
  - Editor to change the definition to read:
  - A bidirectional link from one non-AP quality of service (QoS) STA to another non-AP QoS STA operating in the same infrastructure QoS basic service set that does not pass through a QoS AP. Once a direct link has been set up, all frames between the two non-AP QoS STAs are exchanged directly.
- **Moved: Peter Ecclesine/Johnny Zweig**
- **5/0/0: passes**

## Motion #10

- **Moved: to reject comment #28 with the following resolution:**
  - The term QoS, when combined with BSS, IBSS, AP, or STA, is still used in the standard. Only the acronym was removed.
  - The editor is to revise the definition as follows:
  - The prioritized carrier sense multiple access with collision avoidance (CSMA/CA) access mechanism used by QoS STAs in a QoS basic service set. This access mechanism is also used by the QoS AP and operates concurrently with hybrid coordination function (HCF) controlled channel access (HCCA).
- **Moved: Dorothy Stanley/Johnny Zweig**
- **4/0/0: passes**



## Motion #11

- **Moved: to reject comment # 39 with the following resolution:**
  - The term "QoS STA" is defined in 3.122 as " a STA that implements the QoS facility". This allows consistent and unambiguous use of the term in the rest of the standard.
- **Moved: Peter Ecclesine/Johnny Zweig**
- **5/0/0: passes**

## Motion #12

- **Moved: to accept comment # 35 in principle, with the following resolution:**
  - The table in 10.4.4.2 is not complete and cannot serve as the sole reference for encoding these values.
  - Replace "bits 6 through 0 are set to the data rate, rounded up to the next 500kb/s (e.g., a 1 Mb/s rate contained in the BSSBasicRateSet parameter is encoded as X'82')." "  
with "bits 6 through 0 are set to the data rate, if necessary rounded up to the next 500kb/s, in units of 500 kb/s. For example, a 2.25 Mb/s rate contained in the BSSBasicRateSet parameter is encoded as X'85'."
- **Moved: Peter Ecclesine/Dorothy Stanley**
- **5/0/0: passes**

## Motion #13

- **Moved: to reject comment #19 with the following resolution:**
  - The vendor-specific content field of the vendor-specific action frame is totally unconstrained and forbidding the inclusion of vendor-specific information elements is not consistent with this.
  - The commenter is correct that, without knowledge of the structure of the vendor-specific action frame, it will be impossible to parse. It is not intended that all STAs be able to parse any portion of the vendor-specific content. Only those STAs that have a priori knowledge of the structure will be able to parse the frame.
- **Moved: Johnny Zweig/Dorothy Stanley**
- **5/0/0: passes**

## Motion #14

- **Moved: to accept the suggested remedy as the resolution to comment #37**
- **Moved: Peter Ecclesine/Todor Cooklev**
- **4/0/0: passes**

## Motion #15

- **Moved: to reject comment #40 with the following resolution:**
  - The comment is out of scope for the current ballot. The text regarding HCCA has not changed. The comment will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.
- **Moved: Johnny Zweig/Dorothy Stanley**
- **5/0/0: passes**

## Motion #16

- **Moved: to reject comment #41 with the following resolution:**
  - The comment is out of scope of the current ballot. There are no technical changes to the text regarding APSD operation. The comment will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.
- **Moved: Dorothy Stanley/Peter Ecclesine**
- **5/0/0: passes**

# Motion #17

- **Moved: to accept comment #7 in principle, with the following resolution:**
  - 1. In clause 8.5.5 paragraph 1 Replace the sentence beginning "At this point" with the following sentence:
    - "A Supplicant enters the STAKEYSTART state on receiving an EAPOL-Key frame from the Authenticator"
    - This reinstates the original text from 802.11i.
  - 2. In figure 153, delete the arrow coming downwards out of the STAKEYSTART state and the "PeerKeyInit" text label
  - 3. Move the following variable definitions from 8.5.5.2 to a new section, 8.5.5.5 "Supplicant PeerKey state machine variables":
    - PeerKeyInit, TimeoutEvt, TimeoutCtr, MICVerified - note-not the first one in the list, the second one, SMKMsgNo, STKMsgNo, STA\_P, STA\_I, STKKey
  - 4. Duplicate the following variable definition from clause 8.5.5.2 and insert them into 8.5.5.5:
    - EAPOLKeyReceived
  - 5. Change the name of clause 8.5.5.4 from Supplicant PeerKey state machine procedures to Supplicant PeerKey state machine states
- **Moved: Dorothy Stanley/Jouni Malinen**
- **4/0/0: Passes**

## Motion #18

- **Moved: To direct the editor to create 802.11REV-ma draft 9.0, incorporating the comment resolutions in document 06/1393r0.**
- **Moved: Johnny Zweig/Jouni Malinen**
- **3/0/0: passes**



## Motion #19

- **Moved:** to request the chair of TGm to seek the approval of all completed comment resolutions in document 06/1393r0 by the 802.11 Working Group.
- **Moved:** Dorothy Stanley/Jouni Malinen
- **3/0/0:** passes

## Motion #20

- **Moved: to request the chair of 802.11 to begin a fourth sponsor recirculation ballot, using 802.11REV-ma draft 9.0, 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 November 2006.**
- **Moved: Jouni Malinen/Johnny Zweig**
- **3/0/0: passes**

# Work Completed

<b>Comments at start of session</b>	<b>0</b>
<b>Comments received during session</b>	<b>41</b>
<b>Total Comments received</b>	<b>41</b>
<b>Comment resolutions written</b>	<b>41</b>
<b>Resolution writing completion</b>	<b>100%</b>
<b>Previously adopted resolutions</b>	<b>0</b>
<b>Comment resolutions adopted during session</b>	<b>41</b>
<b>Editorial comments assigned to editor</b>	<b>0</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 #1

- **The current description of Information elements in 7.3.2 is vague about the processing of unknown element-specific information fields, in contrast with the processing of unknown information element fields:**
  - A STA that encounters an unknown or reserved element ID value in a management frame received without error shall ignore that element and shall parse any remaining management frame body for additional information elements with recognizable element ID values.
  - An example would be an 802.11j conformant STA that receives a Country Information Element for Japan with a Regulatory Class value of 21, which was reserved at the time of 802.11j approval, but has subsequently become specified.
- **PROPOSAL**
- **Change the current text to include the processing of unknown element-specific information fields:**
  - A STA that encounters an unknown or reserved element ID value [or unknown element-specific information field] in a management frame received without error shall ignore that element [or unknown element-specific information field,] and shall parse any remaining management frame body for additional information elements with recognizable element ID values.

# Interpretation Response #1

- **The standard is silent on this matter, in general. It does not specify any particular action to be taken by a compliant implementation in the situation described by the requester. There are specific requirements for some fields in some information elements, but not all.**
- **This issue will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.**

## Motion #21

- **Moved: to accept document 06/1437r0 as the response to the interpretation request #1.**
- **Moved: Johnny Zweig/Peter Ecclesine**
- **2/0/0: passes**

## Interpretation Request #2

- **Object: Request for interpretation for IEEE Std 802.11-1999 Clause: 9.2.5.3**
- **According to clause 9.2.5.3 "After an RTS frame is transmitted, the STA shall perform the CTS procedure, as defined in 9.2.5.7. If the RTS transmission fails, the short retry count for the MSDU or MMPDU and the STA short retry count are incremented."**
- **However, in annex C.3 (page 348), in the case of a RTS failure, the only counters which are incremented are the long one's (the short one's are not modified in this case).**
- **Are the annex and the clause in conflict?**

## Interpretation Response #2

- **The standard is ambiguous on this issue. Clause 9.2.5.3 and 9.2.5.7 describe the use of the use of the short and long retry counters, when the CTS is not received in response to a transmitted RTS. Annex C.3 also describes this operation. These two descriptions of the requirements of an implementation are in conflict with each other.**
- **The standard is ambiguous on this issue. The issue will be forwarded to the 802.11 Working Group for consideration in a future revision of the standard.**



## Motion 22

- **Moved: to accept document 06/1438r0 as the response to the interpretation request #2.**
- **Moved: Johnny Zweig/Peter Ecclesine**
- **2/0/0: passes**

# Output Documents

- **06/1392r0: This report**
- **06/1391r0: Sponsor Recirculation 3 comments received**
- **06/1393r0: Sponsor Recirculation 3 comments and Resolutions (with adopted resolutions)**
- **06/1437r0: Interpretation Response #1 (06/09)**
- **06/1438r0: Interpretation Response #2 (06/09)**

## Goals for November (or earlier)

- **Process comments received from fourth sponsor recirculation ballot, if necessary**
- **Submit report to 802 EC for forwarding to RevCom**
- **Process any interpretation requests received**

# Adjourn

- **Meeting adjourned at 1748 on 18 September 2006.**

---

# Attendees

- **Dorothy Stanley**
- **Jouni Malinen**
- **Johnny Zweig**
- **Ariel Sharon**
- **Andrew Myles**
- **Guido Hiertz**
- **Peter Ecclesine**
- **Emily Qi**

**IEEE P802.11  
Wireless LANs**

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

Date: 2006-9-18

**Author(s):**

Name	Company	Address	Phone	email
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**Abstract**

Cumulative minutes of the High Throughput Task Group meetings held during the IEEE 802.11 Interim session in Melbourne from Sept 18 through 22, 2006. The session was chaired by TGn chair Bruce Kraemer from Marvell.

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**Executive Summary (also see Chairs' meeting doc 11-06-1132r5 and closing report doc. 11-06-1500r0):**

1. Meeting focused on comment resolution (CR).
2. There were 3000 unique technical comments from LB84; ~1000 were resolved at the July meeting and another ~1000 between July and September and at the September session so that ~1000 remain.
3. There were (#73-#34=) 39 motions passed to adopt the ~1000 July-Sept comment resolutions
4. Draft D1.04 was approved
5. Goal for Nov Plenary and January Interim sessions is to resolve the remaining ~1000 comments and authorize the second .11n WG letter ballot after the January meeting.
6. Oct/Nov Teleconference (Wednesdays 11-1 PM ET) schedule agreed to:
  - a. Oct 4 – General
  - b. Oct. 11 & 25 – Coexistence
  - c. Nov. 1 Phy
7. October 17-19 Ad Hoc Location was changed from Santa Clara to Portland – Intel Cornell Oaks campus
8. November 9-11 Ad Hoc at Dallas Hyatt Thursday thru Saturday before the Plenary meeting
9. Timeline – no change; supplement will be published 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; Sept 19, 2006; 10:30 PM – 12:30 PM [~ 104 attendees; 2 new]**

1. Meeting was called to order by TGn chair at 10:34PM
2. Chairs' Meeting Doc 11-06-1132r0
3. Chair read IEEE-SA Standards Board Bylaws on Patents in Standards 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>
6. Chair reviewed history and timelines (slide 9) including goals and progress from inception for new members
  - 6.1. Created Draft 1.03 out of July meeting
7. Chair listed ad hocs formed for CR
8. Oct 17-19 ad hoc in west coast will be firmed up later in the week
9. Ad hoc spread sheet (slide 13) status was presented

10. Goal Draft 1.03 which includes July changes -> D 1.04 containing Sept CRs -> D1.05 which will contain CRs up to Nov.
11. CR summary to date is ~50% of technical comments (12000 of which 6000 were unique and of those 3000 tech and 3000 editorial)
  - 11.1. 3000 tech -> 1084 accepted (-43 for rework) -> 467 processed since July and 499 ready for motions leaving 1117 pending
12. Timeline reviewed and will be updated at the end of this meeting
13. Reminders:
  - 13.1. Make sure your badges are visible especially when voting
  - 13.2. No company logos on presentations
14. Slide 13; Exec Summary from July minutes, 11-05-0968r1, presented
15. **Motion by Jon Rosdahl to approve July minutes, 11-06-0968r1 was seconded by Jim Petranovich and approved unanimously**
16. Sept objective – CR
17. Agenda discussion (slide 24)
  - 17.1. Plan for week and ad hoc updates now
  - 17.2. CR during the week
  - 17.3. Thursday – Time line and future plans
  - 17.4. Special Interest Topics
    - 17.4.1. Security concerns (11-06/1348)
    - 17.4.2. CA revision (11-06/0338r4)
    - 17.4.3. Waveform Generator (11-06/1400r1); issue – how to attach to the standard (7 AM Tuesday)
  - 17.5. Room assignments and ad hoc assignments discussion
    - 17.5.1. Evening session today
    - 17.5.2. Only have this one meeting room for ~50% of time! How to conduct ad hocs in parallel
    - 17.5.3. Even when the extra rooms are available they are extremely small
    - 17.5.4. Coex and Beam at 1:30 today in this room in series;
    - 17.5.5. Monday evening – 2 ad hocs (PHY, MAC) in parallel since rooms available
    - 17.5.6. Tuesday 10:30 CA and MAC; 1:30 – CA and Phy; 4:00 – full session, followed by Frame ad hoc ; evening BF and coexistence ad hocs in parallel
    - 17.5.7. Wednesday 8 AM Full meeting which will likely include Phy (votes) followed by MAC ad hoc; 1:30 Gen, Coexistence and Beam; 4:PM Mac and Phy
    - 17.5.8. Thursday 8 AM Frame and Phy and General; 10:30 TBD; 1:30 PM Full for motions; 4:00 PM Full for motions
    - 17.5.9. PSMP does not need ad hoc time this week
  - 17.6. **Motion to approve agenda on slides 22-31 (1132 r1) by Jim Petranovich and seconded by TK Tan passed unanimously**
18. Tech Editor Report by Adrian Stevens (11-06/1372r1)
  - 18.1. 3 versions ready – D1.03; redline version; word conversion to facilitate contributions
  - 18.2. Draft 1.03 – implemented A and C comments with Edit status (new) and Edit notes
  - 18.3. Comment resolution status in 11-06/0706r11 (slide 7)
  - 18.4. Treatment of EMR and ER comments; these need approving by ad hocs before Draft 1.04
  - 18.5. ER need to be redone and will not be in D1.04



- 18.6. Edit motions likely this week – approve Edit with mods (EM); approve of EMR (EM with return); include in D 1.04; separate motion on 100 editorial comments
- 18.7. 13 excel work sheets in 9 separate files
- 18.8. ~ 64% thru unique technical comments
- 18.9. 467 comments in motions for this week
19. Ad Hoc Progress Reports
  - 19.1. Beam forming (BF) & Link Adaptation (LA) – John Ketchum (verbal)
    - 19.1.1. 287 comments remain
    - 19.1.2. 130 classed as deferred
    - 19.1.3. 157 to be motioned this week
    - 19.1.4. 28 need to be reconsidered (1326r4)
    - 19.1.5. 9 submission reviewed and accepted
    - 19.1.6. 7 in limbo
    - 19.1.7. 12 to be reviewed
  - 19.2. PSMP - Naveen Kakani ( 11-06/1450r0)
    - 19.2.1. spread sheet 11-06/687r29
    - 19.2.2. 21 deferred comments
    - 19.2.3. Tuesday AM2 – one straw poll and one motion
  - 19.3. General – Jon Rosdahl (verbal)
    - 19.3.1. Aug 30 ad hoc; revision 29
    - 19.3.2. Last week – revisions 30 and 31
    - 19.3.3. only 20 are left to resolve
  - 19.4. MAC – Matt Fischer (11-06/1396r6)
    - 19.4.1. EMR last Wed
    - 19.4.2. Thurs CR; 1347/8 security issues
    - 19.4.3. Friday – CR and motions
    - 19.4.4. This week – Tues AM2 – 5 motions on 187 comments
    - 19.4.5. 93 comments which have not been considered
  - 19.5. PHY – Jim Petranovich (11-06/1448r2)
    - 19.5.1. 542 remaining comments
    - 19.5.2. 176 not reviewed
    - 19.5.3. 188 proposed resolutions
    - 19.5.4. 178 deferred
      - 19.5.4.1. 48 by submission
    - 19.5.5. GF preamble is still problematic
  - 19.6. Frame Format – Peter Loc ( 11-06/1453r1)
    - 19.6.1. ref spread sheet (11-06/0717r34)
    - 19.6.2. comments yet to be addressed – 71
    - 19.6.3. Goal – address the 71 comments
    - 19.6.4. Motions this week 4
  - 19.7. Coexistence – Don Schultz (verbal)
    - 19.7.1. doc 11-06/0724r22
    - 19.7.2. 70+ comments this past week
    - 19.7.3. 200+ to go
    - 19.7.4. Deferred comments – controversial/complex
    - 19.7.5. 22 submission to address deferred
  - 19.8. CA Doc – Sheung Li (Verbal)
    - 19.8.1. Eldad Perahia significantly updated the CA doc – (11-06/338r4)
    - 19.8.2. Accompanying spread sheet (11-06/0731r4)

## 19.8.3. Chair recessed session at 12:24 PM

Time	Monday 9-18	Tuesday 9-19	Wed 9-20	Thursday 9-21	
8:00-10:00	<b>WG Plenary</b>	⊘ + Editor Ad Hoc in John Batman S1	<b>Full TGn PHY- vote, MAC + Gen in J Batman</b>	<b>Frame PHY</b>	Am1
10:30-12:30	<b>2 - Full TGn</b>	<b>Full TGn CA MAC</b>	<b>WG Plenary</b>	<b>Full TGn +1S</b>	Am2
13:30-15:30	<b>Coex Beam</b>	<b>Coex PHY</b>	<b>Coex Beam +Gen in Batman</b>	<b>Full TGn +1s</b>	PM1
16:00-18:00	⊘	<b>Full TGn Frame</b>	<b>MAC PHY</b>	<b>Full TGn</b>	PM2
19:30-21:30	<b>2 ad hocs PHY in Bell 6;,MAC in Bell 2</b>	<b>2 ad hocs Beam in Bell 2 , Coex in Bell 6</b>	⊘	⊘	Eve

20. Chair reconvened session at 1:36 PM

21. Update to room assignments (see agenda above)

22. Coexistence ad hoc

22.1. Srini Kandala; (11-06/1449r0); Text for Resolving 1519, 3885, 6943

22.2. Srini explained his straw man edits were to generate discussion based on D1.03

22.3. Discussion:

22.3.1. Need to make the format more systematic to catch all cases

22.3.2. CID 1519 – can send non-HT frames versus duplicates

22.3.3. Not sure this protection is really needed in all cases

22.3.4. Next steps?

22.3.4.1. form subgroup – about 5 responded positively

22.3.4.2. should we really protect operating mode 10

22.3.4.3. hidden node issue

22.4. Joe Levy; (11-06/1414r0); Submission to Address LB84 CID 782

22.4.1. The change rewords and restructures the Long NAV section 9.13.5.2 to clarify the intent of the section.

22.4.2. Comments:

22.4.2.1. Setting NAV or Duration field

22.4.2.2. This entire clause is in .11e so should we remove

22.4.2.3. There is some overlap with base standard but not complete

22.4.2.4. We need somewhere to specify the length of the duration field

22.4.2.5. Form a subcommittee

22.5. Joonsuk Kim; (11-06/1458r1); Opening Presentation

22.5.1. Based on (11-06/0675r35)

22.5.1.1. much progress last week

22.5.1.2. still have 21 deferred comments without assignees

22.5.2. Consider 11-06/1134r2 by John Ketchum

22.5.2.1. Agreement to accept these updated definitions

- 22.5.3. Venko Erceg; (11-06/1032r3); Explicit Feedback with Sounding Packet
    - 22.5.3.1. In clause 9.20.3.3 (pg 24, line15) define sounding PPDU as being unsteered and the MAC/PHY ambiguity is resolved in 11-06/886r4
    - 22.5.3.2. Who should take out Ccsd – Beamformee or Beamformer?
    - 22.5.3.3. Extra steps in Beamformee proposal?
    - 22.5.3.4. Straw Poll – Beamformee 16, Beamformer 27
  - 22.5.4. Solomon Trainin; (11-06/1355r0); Explicit Feedback Submission
    - 22.5.4.1. Deals with CIDs in 11-06/675r35 – 3764, 10312, 31313, 2716
    - 22.5.4.2. No one objected to the proposed solutions
23. Chair recessed the session at 3:28 until tonight at 7:30 PM

## Tuesday Sept 19, 2006

1. Chair reconvened full session at 10:32 AM
2. Is communication re: rooms working? A - yes
3. New info since yesterday
  - a. TGv has released their Wed slot
  - b. TGM has released their 4 slots
  - c. Therefore we can run parallel ad hoc meetings as follows:
    - i. on Wednesday MAC in Bell3 in Wed PM1; Phy in Bell 6 in Wed PM1 and Gen in J Batman in S1 in Wed PM1
  - d. Also, three B rooms are available during the ad hoc session times so we can run in parallel
    - i. PSMP wanted Wed PM2 in B5
    - ii. Tuesday AM2 at 11:30 for Beam in B5
    - iii. Wednesday PM2 Mac in B5 and Phy in B6
    - iv. Change Thurs PM2 from Phy to Coex in B6
  - e. Remove full TGN for PM2 today and use for ad hocs
  - f. Push CA to Wednesday AM1 after conducting votes or, if we run out of time push to Thursday morning AM2 meeting
  - g. Motion to accept the agenda modifications by Sheung Li and seconded by Jon Rosdahl passed unanimously**
4. Ad hoc on West Coast Oct 17-19?
  - a. Meeting space and hotels were not available in Santa Clara
  - b. Intel has offered space in Portland
  - c. Does group agree to location change but not date change
  - d. Hotels at Intel rates are being investigated
- 5. Motion to change the venue from Santa Clara to Portland by Jon Rosdahl and seconded by Tim Towell passed unanimously without further discussion. There were 79 people in attendance.**
6. Editors report - Adrian
  - a. 2 EMRs from Coex remain to be resolved
  - b. What happens if the 2 cannot be resolved
  - c. Adrian would have to reverse D1.03 edits
7. 'General' Motions
  - a. General (11-06/0688r32); #35 Moved by Jon Rosdahl and seconded by Adrian Stephens - Whereas in July a TG motion (TG motion #2) to accept 11-06-0755r2 as a "Counter" resolution for a number of comments passed unanimously; Whereas the following CIDs have the same proposed**

resolution and were intended by the AdHoc Group to have been included in the previous motion; Move to accept 11-06-0755r2 as the "Counter Resolution" for the listed CIDs:

<b>1732</b>	<b>7215</b>	<b>10257</b>
<b>3687</b>	<b>7343</b>	<b>10308</b>
<b>3688</b>	<b>7561</b>	<b>10348</b>
<b>4392</b>	<b>10224</b>	

i. Discussion

1. Comments location? A – 11-06/0541 r9
2. Clean up motion? A – yes

ii. Motion passed unanimously

- b. Motion #36 by Jon Rosdahl and seconded by Assaf Kasher to accept the respective resolutions in Doc:11-06-0688-29 for the following CIDs that were declined:

<b>92</b>	<b>1753</b>	<b>7700</b>
<b>111</b>	<b>1786</b>	<b>7903</b>
<b>119</b>	<b>2124</b>	<b>8105</b>
<b>808</b>	<b>2353</b>	<b>10349</b>
<b>836</b>	<b>4799</b>	<b>12025</b>
<b>1525</b>	<b>7428</b>	

i. Discussion

1. Should “refer to submission archive” be removed? A – we have no idea if the archive exists
2. How do we find the CIDs? A – Jon walked process

ii. Motion to amend by Jon Rosdahl to remove “refer to submission archive” was seconded by Adrian Stephens passed unanimously

iii. Main motion passed unanimously

- c. Motion #37 by Jon Rosdahl and seconded by Matt Fischer to accept the respective resolutions in Doc:11-06-0688r29 for the following CIDs that were Countered:

The Gen AdHoc Group recommends accepting the counter proposal changes for the following CIDs.

Note that CIDs 415, 4020 4548 are updated following recycling by the editor. They have been corrected to address typographical errors in the spreadsheet.

**Included in this motion to change the status**

90	732	415
429	814	4020
688	10306	4548
	10366	

**i. Discussion**

1. CID 306 - ? A – considered in other comments
2. CID 10366 - ? A – that clause has been removed
3. Motion to amend by Jon Rosdahl and seconded by Matt Fischer to exclude CID 10366 from motion passed unanimously

**ii. Main Motion passed unanimously**

- d. Motion # 38 by Jon Rosdahl and seconded by Srimi Kandala to accept the respective resolutions in Doc:11-06-0688r30 for CID 3154 that were Accepted passed unanimously
- e. Straw Poll - Whereas Mathilde has two open comments in the General AdHoc (and a couple of others in other Ad Hocs), and has requested time to present a proposal; The Gen AdHoc requests that TGn as a whole decide the need to continue the consideration of these comments (CID 297 & 298): Question: Shall TGn continue consideration of the "CCC MAC" as an optional addition to TGn? (Yes -3 No- 44)

- f. Straw Poll - Gen AdHoc request the full TG consideration of CID #12006:  
 Comment: The current approach of MCS set in the capability field creates some problems of size, over complication in case of same rates, complicates interop testing. Proposed change: We want to discuss replacing it with capability class. Proposed Resolution: A Straw poll should be done to determine the support for this proposed Idea and a Submission solicited in light of the results. Straw poll Question: Do you support this idea of simplifying the MCS set? Yes-18; No-27

**8. MAC Motions ref doc (11-06/1396r7)**

- a. #39 Moved by Matt Fischer and seconded by Adrian Stephens to accept comment resolutions in 11-06/0690r34 tab "motion\_1\_1363" passed unanimously without discussion
- b. #40 Moved by Matt Fischer and seconded by Solomon Trainin to accept comment resolutions in 11-06/0690r34 tab "motion\_2\_emr" passed unanimously and without discussion

- c. #41 Moved by Matt Fischer and seconded by Srinu Kandala to accept comment resolutions in 11-06/0690r34 tab "motion\_3\_912" passed unanimously without discussion
  - d. #42 Moved by Matt Fischer and seconded by Assaf Kasher to accept comment resolutions in 11-06/0690r34 tab "motion\_4\_ba", excluding the resolution for CID 3719 passed unanimously without discussion
  - e. #43 Moved by Matt Fisher and seconded by Srinu Kandala to accept comment resolutions in 11-06/0690r34 tab "motion\_5\_weptkip"
    - i. Discussion
      - 1. Not resolving 116? A – that is correct
      - ii. Motion passed unanimously
  - f. #44 Moved by Matt Fischer and seconded by Naveen Kakani to accept the proposed resolution for CID10351 found in 11-06/0690r34 tab "MAC" passed unanimously without discussion
9. PSMP Motion ref doc (11-06/1450r1)
- a. Straw Poll PSMP frame should be a Control frame instead of Management Action frame? Yes - 23 No – 0 Don't Care - 27
  - b. Motion #45 by Naveen Kakani and seconded by Adrian Stephens to accept the resolutions for comments as shown in, "11-06/687r29 PSMP Motion 2 Tab" excluding CIDs 1034 and 1369 passed unanimously without discussion
10. Jim Petranovich noted that Phy motions are in 11-06/1488 relating to the Phy spread sheet 11-06/0693r41 and asked folks to do their homework and review the motions
11. Chair recessed the session at 12:23 PM until 1:30 PM for consecutive Coexistence and Beam ad hoc sessions.

### Wednesday 9-20-06; 8:00 – 10:00 AM

- 1. Chair reconvened the full session at 8:02 AM
- 2. Chair reviewed the agenda
  - a. Phy vote
  - b. CA Presentation
  - c. MAC ad hoc
  - d. General ad hoc
- 3. Thursday more rooms have become available so let's run ad hocs in parallel instead of in series
  - a. Frame now in Correon 1
  - b. Phy now in Bell 6
- 4. Motion to make the room change passed unanimously
- 5. Adrian Stephens re: editorial motions (11-06/1372 r4)
  - a. #46 Moved by Adrian Stephens and seconded by Matt Fischer to: Whereas the editor found it necessary to make minor modifications in the incorporation of TGn comment resolutions approved in July, identified with an "Edit Status" of "EM", and

whereas 11-06/0706r15 has 181 "EM" Comments:

CIDs: CID, 24, 25, 44, 51, 123, 130, 157, 201, 461, 498, 560, 589, 610, 613, 623, 633, 663, 668, 855, 867, 874, 934, 936, 937, 978, 979, 1075, 1082, 1103, 1107, 1110, 1114, 1116, 1120, 1122, 1135, 1138, 1139, 1149, 1168, 1170, 1257, 1281, 1286, 1289, 1297, 1300, 1303, 1304, 1307, 1314, 1318, 1327, 1338, 1339, 1426, 1430, 1456, 1457, 1460, 1461, 1473, 1742, 1752, 1805, 1956, 1965, 1969, 1992, 2470, 2486, 2572, 3155, 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, 3200, 3201, 3203, 3205,

3209, 3210, 3211, 3212, 3214, 3215, 3216, 3217, 3218, 3411, 3412, 3420, 3421, 3432, 3442, 3466, 3474, 3620, 3755, 3804, 3827, 3841, 3852, 3912, 3998, 4019, 4022, 4050, 4545, 4552, 4599, 4606, 4676, 4818, 5108, 5109, 5152, 5156, 5157, 6765, 6781, 6782, 6789, 7050, 7104, 7105, 7156, 7224, 7337, 7338, 7353, 7580, 7609, 7621, 7657, 7658, 9955, 9969, 10304, 10353, 11970, 11996, 12001, 12149, 12255

Move to accept the resolution of the comments as amended by the "Edit Notes" column where the comment has an "Edit Status" of "EM" (Edited with modifications) in document 11-06/0706r16 on the "Edited" tab

Passed unanimously without discussion

b. #47 Moved by Adrian Stephens and seconded by Jon Rosdahl to:

Whereas review was requested of modifications in the incorporation of TGn comment resolutions approved in July, identified with an "Edit Status" of "EMR", and

whereas the referenced EMR comments have been reviewed and updated by the technical ad-hocs

30 CIDs: 1443, 2334, 3976, 10079, 1311, 1209, 1423, 1445, 1455, 4638, 7276, 7283, 7612, 612, 632, 635, 1119, 1181, 1990, 3754, 3727, 3729, 5140, 8112, 1459, 7308, 6788, 3726, 3746, 1533,

(The other 17 EMR comments were brought before TGn independently by General, MAC and PSMP motions)

Move to accept the resolution of comments in document 11-06/0706r16 on the "EMR Comments" tab tab with the following modifications:

- Correct the document reference in CID 1459 to 06/1412r3 (from 06/1442r3)
- Remove “ and Table 15a” from resolution in CID 3746 (would otherwise make Supported rates element mandatory for non-HT STA in measurement pilot)

i. Discussion

1. Are the supported rates in Table 15.9 in or out? A – in
2. Is 10351 correctly excluded? A – y
3. Re: CID 3746, is resolution truncated? A – yes but editor will repair, full contents are in previous revisions of the doc.
4. Re: CID 3754; why do we need to look at the MCS set? A – this is a Frame ad hoc comment - must set the response at a rate the receiver can receive
5. Re: CID 1990; all frames in MSDUs must have the same DA? A- your interpretation is not correct; depends on ‘to or from DS’

ii. Motion passes unanimously without further discussion

6. Phy motions by Jim Petranovich (11-06/1488r1)

- a. **#48 Moved by Jim Petranovich and seconded by Assaf Kasher to Approve resolution of comments found on the tab labelled “pending motion set 3” in document 11-06/0693r42.**
- i. Discussion
    - 1. Remove CIDs 160 and 161? A – Yes, if Anuj will make a presentation to explain your objection? A – yes
    - 2. Remove 240 and 248 because limited sample set to reach a conclusion? A – OK and Anuj will make a submissions to justify
    - 3. Remove 253 and 692 because the resolution was misread and the commenter feels the resolution is not complete? A – OK and Eldad will provide a presentation
  - ii. **Motion to amend by removing CIDs 160, 161, 240, 248, 253 and 692 by Jim Petranovich and seconded by Anuj Batra passed unanimously without further discussion**
  - iii. **Main motion passed unanimously without further discussion**
- b. **#49 Moved by Jim Petranovich and seconded by Assaf Kasher to Approve resolution of comments found on the tab labelled “pending motion set 4” in document 11-06/0693r42 passed unanimously without discussion**
- c. **#50 Moved by Jim Petranovich and seconded by Matt Fischer to Approve resolution of comments found on the tab labeled “pending motion set 5” in document 11-06/0693r42.**
- i. Discussion
    - 1. Remove 12030, 12048, 10292 related to GF because MAC protection mechanisms are inadequate? A – OK and will transfer to the MAC group?
    - 2. Reluctant to transfer because of the many GF issues being considered in the PHY group? A – OK, will defer in PHY ad hoc and a submission will be made
  - ii. **Motion to amend by Jim Petranovich and seconded by George Vlantis to remove the CIDs 12030, 12048 and 10292 passed unanimously without further discussion**
  - iii. **Main motion passed unanimously without further discussion**
- d. **#51 Motion by Jim Petranovich and seconded by Bjorn Bjerke to approve resolution of comments found on the tab labelled “pending motion set 6” in document 11-06/0693r42.**
- i. Discussion:
    - 1. Remove CID 4452 because it references a modified document (11-06/952r1). The modification was to remove the phrase “and spatial mapping” at the end of the paragraph following CID 4452 and in the same paragraph replace the word “often” with “sometimes”. Also, note



that the related comment field on CID 4843 is invalid? A – OK, will make an amendment

**ii. Motion to amend main motion by Jim Petranovich and seconded by Anuj Batra to remove the phrase “and spatial mapping” at the end of the paragraph following CID 4452 and in the same paragraph replace the word “often” with “sometimes”. Also, note that the related comment field on CID 4843 is invalid? Passed unanimously without further discussion**

**iii. Main motion passed unanimously without further discussion**

7. Eldad Perahia presentation (11-06/1482r2) outlining major changes to CA document (11-06/338r4) as a result of comments received on the original CA document
  - a. Discussion
    - i. If you don't do anything special in PHY will a BT or PAN packet collision cause degradation? A – yes but this is a rare event
    - b. Motion vote will be held tomorrow so please do your homework
8. Broke into parallel ad hoc sessions with MAC here in Bell 6 and General in John Batman at 9:24 AM . Next Full session is Thursday at 10:30 AM

#### **Thursday Sept 21, 2006 10:30 AM (~76 in attendance)**

1. Chair reconvened the full .11n TG session at 10:39 AM
2. Chairs Doc. 11-06/1132r4
3. Due to 4 hour rule the motions may be voted on in a less than intuitive order
4. Slide 56 summarizes the Comment Resolution Votes
5. Motions:
  - a. **PSMP (11-06/1528r0); #52 Moved by Naveen Kakani and seconded by Jon Rosdahl to approve the comment resolutions shown in the ‘PSMP Motion 3’ tab of document 11-06-687/r31 except CID 7264 passed unanimously without discussion**
  - b. **General (11-06/1527r0); #53 Moved by Jon Rosdahl and seconded by Naveen Kakani to Approve resolutions of comments found on the tab labelled “Sept. 2nd Set Proposed Resolved” in document 11-06/0688r35 passed unanimously without discussion.**
  - c. **Coexistence; #54 Moved by Sheung Li and seconded by TK Tan to accept CA doc comment resolutions in 11-06/0731r4 passed unanimously without discussion**
  - d. **Coexistence (11-06/0???r0); #55 Moved by Sheung Li and seconded by TK Tan to accept 11-06/0338r4 as the Coexistence Assurance Document for TGn passed without discussion**
  - e. **Editor (11-06/1375r4); #56 Moved by Adrian Stephens and seconded by Assaf Kasher to accept the resolutions to comments contained in 11-06/0706r17 on the editorials tab excluding CID 1799 passed unanimously without discussion**
  - f. **Beam (11-06/1520r0); #57 Moved by John Ketchum and seconded by Solomon Trainin to Approve resolution of comments found on the tab labelled “Pending motion 2” in document 11-06/0675r38.**
    - Based on acceptance of 06/886r4
    - Resolves 59 comments with As and Cs
  - i. **Motion passed unanimously without discussion**
  - g. **Beam (11-06/1520r0); #58 Moved by John Ketchum and seconded by Joonsuk Kim to Approve resolution of comments found on the tab labelled “Pending motion 3” in document 11-06/0675r38.**

- Based on acceptance of 06/1334r2
- Resolves 18 comments with As and Cs
- i. Motion passed unanimously without discussion
- h. Beam (11-06/1520r0); #59 Moved by John Ketchum and seconded by Joonsuk Kim to Approve resolution of comments found on the tab labelled "Pending Motion 4" in document 11-06/0675r38.
  - Based on acceptance of 06/1367r0, 06/1385r1, 06/0920r5, 06/0597r1, 06/1379r2, 06/1373r2
  - Resolves 18 comments with As, Cs, and an R
  - i. Motion passed unanimously
- i. Beam (11-06/1520r0); #60 Moved by John Ketchum and seconded by Joonsuk Kim to accept the comments found on the tab labeled "Pending Motion 5" in document 11-06/0675r38 passed unanimously without discussion
  - i. Based on acceptance of 06/1302r3, 06/1304r0, 06/1309r1
  - ii. Resolves 18 comments with Cs
- j. Beam (11-06/1520r0); #61 Moved by John Ketchum and seconded by Adrian Stephens to accept the comments found on the tab labeled "Pending Motion 6" in document 11-06/0675r38 passed unanimously without discussion
  - i. 3 CIDs whose resolutions have already been implemented in D1.03
  - ii. Involves adding 'channel width' field to explicit feedback messages
- k. Beam (11-06/1520r0); #62 Moved by John Ketchum and seconded by Joonsuk Kim to accept the comments found on the tab labeled "Pending Motion 7" in document 11-06/0675r38 passed unanimously without discussion
  - i. 6 CIDs Resolved with R
- l. Beam (11-06/1520r0); #63 Moved by John Ketchum and seconded by Joonsuk Kim to accept the comments found on the tab labeled "Pending Motion 8" in document 11-06/0675r38 with 7 CIDs addressing 9.19.4 passed unanimously after the following discussion
  - i. Discussion: does this mean 9.19.4 in D1.0 will disappear? A - yes
- 6. Any objection to reordering agenda to consider timeline and meeting schedule so that the 2 hour rule can be met for the remaining motions? Body answered – none
- 7. Let's consider upcoming meetings schedule
  - a. Oct ad hoc – Portland Oct 17-19 at Intel Cornell Oaks campus
  - b. Nov ad hoc – Dallas Nov 8-10
  - c. Nov Plenary 12-17
  - d. Jan ad hoc at London Interim Jan 09-12
  - e. Jan Interim in London Jan 15-19
- 8. Straw Poll – Wednesday thru Friday Nov 8-10 for Dallas ad hoc? Yes – 17; Thursday thru Saturday Nov 9-11? Yes – 21
- 9. Move by Jim Petranovich to set ad hoc dates as Nov 9 to 11, 2006 in Dallas was seconded by Tim Towell
  - a. Discussion
    - i. Hyatt appears to have rooms Thursday PM thru Saturday
    - ii. Recall that Nov meeting is a plenary so you don't have to be in Dallas until Monday at noon
    - iii. There may be a block of time for ad hocs Monday morning
  - b. Motion passed (24, 23, abstains not taken)
- 10. Map to the Intel Cornell Oaks campus location; hotels with Intel rates noted; (slide 66)
  - a. Intel rooms – 1 with capacity of 70, 3 with capacity of 20 people
- 11. London ad hoc (slide 68)
  - a. Motion by Brett Douglas and seconded by Rolf de Vengt to request that 802.11WG authorize TGN to conduct an ad hoc meeting for the purpose of comment resolution

**in London, UK during the period from Wednesday Jan 10 to Saturday Jan 13, 2007 with confirmation obtained from TGn during the Nov Plenary passed (24, 21, 1)**

- b. Discussion:
  - i. Let's assume Tuesday thru Saturday in case the extra day is needed
  - ii. Straw Poll – who would attend a London ad hoc prior to the meeting? Yes – 28
  - iii. History – 31Australia, 26 west coast, 30 Dallas so 28 is consistent
  - iv. Straw Poll – Start date of Tuesday, Jan 9? (2); Wednesday Jan 10 (many)
  - v. Straw Poll – End Friday Jan 12? (13) or Saturday Jan 13? (7) Don't care (14)
  - vi. Straw Poll – conclude on Friday Jan 12 (22); conclude on Saturday Jan13 (12)
  - vii. We need to leave ourselves some flexibility and include Saturday
- 12. Teleconference Schedule (slide 69)
  - a. Wednesdays 11-1300 ET; Recall Oct 25 is Wi-Fi; ad hoc meetings Oct 18, Nov 08; Nov 15 is Plenary
  - b. Given the restrictions the allowable dates are 9-27; 10-4,11; 11-1
  - c. Phy wants Nov 1
  - d. Coexistence wants Oct 11
  - e. PSMP wants Oct 11
  - f. Beam, MAC does not want any slots
- 13. Chair recessed at 12:25 PM until 1:30 PM
- 14. Chair reconvened the session at 1:33 PM
- 15. Clarification, the MAC group posted their doc at 9 AM this morning so we can meet the 4 hour rule and still deal with the MAC motions in this meeting
- 16. Returning to teleconference discussion:
  - a. PSMP withdrew its teleconference request for Oct 11
  - b. General wanted one hour of the Oct 4 slot
  - c. Coexistence wanted Oct 25 as well if free
- 17. Timeline discussion (slide 71-73)
  - a. Exec Committee meeting dates are the critical dates – Jan 14-18, Mar 19-21, July 14-18, Nov 10-14
  - b. Current POR April 20, 2008
  - c. 30 days for publication after ratification
  - d. Less clear is if we choose to release a draft after one of our letter ballots - 10-30 days
  - e. Draft can be published at the discretion of the WG chair
  - f. Discussion? None
- 18. Returning to Motions:
  - a. MAC Motion (11-06/1396r11); #64 Moved by Matt Fischer and seconded by Srini Kandala to accept comment resolutions in 11-06/0690r36 tab "motion\_7\_misc"**
    - 06-09-21 PMx TGn action?**
      - i. Discussion
        - 1. exclude 3850
      - ii. Motion to amend by Srini Kandala and seconded by Matt Fischer to exclude CID 3850 passed unanimously**
      - iii. Main motion passed unanimously without further discussion**
- 19. Any objection to turning the meeting into a MAC ad hoc? None
- 20. Chair reconvened the session at 4:02 PM
- 21. Coexistence Motion; #65 Moved by Don Schultz and seconded by Peter Loc to approve the recommendations of the Coexistence Ad hoc group for the comments contained in Motion Tab 3 of document 11-06/0724r26**
  - Resolves 72 comments (16 A, 21 R, 38 C) excluding CID 1519, 3874, 6768,**

- a. **Motion to amend by Don Schultz and seconded by Adrian Stephens to exclude the following CIDs - 3873, 1077, 1209, 1311, 1423, 1445, 4638, 7276, 7283, 7308, 7612, 1455, 0053, 4341 and 1459**
- i. Discussion – 6780 was asked to be excluded because of the inconsistent revision reference but it was concluded that there was no inconsistency; comment 1459 was asked to be excluded because of a typographical error; 3873 was asked to be excluded on the basis of a technical detail; 1077, 0053 and 1423 were asked to be excluded because the resolution was truncated; Adrian asked that 1209, 1311, 1445, 4638, 7276, 7283, 7308, 7612, 1455 be excluded since they had been approved in the previous Editorial EMR motion; it was decided to transfer 4341 to General where a submission is being worked on to rationalize comments with the work being done in .11k
  - ii. **Motion to amend passed unanimously**
  - iii. **Main motion was then passed unanimously**
22. **Phy motion (11-06/1488r3); #66 Moved by Jim Petranovich and seconded by Eldad Perahia to Approve resolution of comments found on the tab labelled “pending motion set 7” in document 11-06/0693r45.**
- a. Discussion/objection – was it decided to remove STBC and MCS32 from the draft? A – yes
  - b. **Vote on this motion was held and passed (61,3,8)**
23. **Editor motion (11-06/1372r6); Moved by Adrian Stephens and seconded by Matt Fischer - Whereas P802.11n D1.04 contains implementation of comment resolutions approved by TGn in July and approved EMR (recycled) comments in September, Approve P802.11n D1.04 as the TGn Draft passed unanimously without objection**
24. **Frame motions (11-06/1517r4);**
- a. **#67 Moved by Peter Loc and seconded by Adrian Stephens to Approve resolutions of comments found on the tab labeled “Pending Motion 1(E)” in document 11-06/0717r36 passed unanimously without discussion**
  - b. **#68 Moved by Peter Loc and seconded by Srinu Kandala to Approve resolutions of comments found on the tab labelled “Pending Motion 2(A)” in document 11-06/0717r36 passed unanimously without discussion**
  - c. **#69 Moved by Peter Loc and seconded by Srinu Kandala to Approve resolutions of comments found on the tab labelled “Pending Motion 3(C)” in document 11-06/0717r36 excluding CIDs 4634 and 7304 passed unanimously without discussion**
  - d. **#70 Moved by Peter Loc and seconded by Srinu Kandala to Approve resolutions of comments found on the tab labelled “Pending Motion 4(R)” in document 11-06/0717r36 excluding CIDs 3744, 1150, 3741, 3414, 0020, 7352, 0028, 3768 passed unanimously without discussion**
  - e. **#71 Moved by Peter Loc and seconded by Adrian Stephens to Approve resolutions of comments found on the tab labelled “motion 11364” in document 11-06/0717r36 excluding CID 9885 and 7255 (similar to 7254 as deferred) and Changing resolution of CID 8107 from T to C due to a typo**
    - i. Discussion – exclude 8107
    - ii. **Motion to amend by Peter Loc and seconded by Srinu Kandala to exclude 8107 passed unanimously without objection**
    - iii. **Main motion passed unanimously without further discussion**

- f. **#72 Moved by Peter Loc and seconded by Adrian Stephens to approve the proposed changes as described in Adrian Stephens' submission 11-06-1426-00-000n-tgn-lb84-submission-related-to-restructuring-7-4-7 as resolutions to CID 7599**
- i. Discussion – request that Adrian Stephens review his submission 11-06/1426r0; Adrian reviewed as requested
  - ii. **Motion passed unanimously without further discussion**
- g. **#73 Moved by Peter Loc and seconded by Adrian Stephens to adopt resolutions to STBC related comments**
- Reference doc: 11-06/1086r4 (Slide #3)**
- **CID #701 C**
  - **CID #7239 C**
  - **CID #9979 A**
  - **CID #3773 W (Withdrawn by commenter)**
  - **CID #7127 C**
- ii. Discussion – none
  - iii. **Motion passed unanimously and without discussion**
25. Chair asked if any other business? None
26. **Motion to adjourn the meeting and session by Jon Rosdahl and seconded by Srinikandala at 5:20 PM passed unanimously**

**IEEE P802.11  
Wireless LANs**

**September 2006, TGp/WAVE Minutes**

**Date:** 18 – 22 September 2006

**Author(s): Rick Noens (Motorola)**

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**Abstract**

This document includes the meeting minutes for the IEEE 802.11 TGp WAVE Task Group held in Melbourne Australia from September 18<sup>h</sup> to 22<sup>th</sup>, 2006, under the TG Chairmanship of Lee Armstrong of Armstrong Consulting and editor Wayne Fisher of ARINC. Minutes are taken by Rick Noens of Motorola.

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**Monday September 18, 2006, 14:00-18:00 Session**

Lee Armstrong opened the meeting and requested a volunteer to serve as secretary for this week's sessions. Rick Noens volunteered.

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 goals for this week's meeting were listed as:**

- 1) Review the current draft document (D1.1)
- 2) Ensure that comment categories from the failed LB have been addressed in the latest draft
- 3) Approve the resulting D1.1 post review and edits
- 4) Prepare for the next LB

The agenda was reviewed and approved unanimously.

The July meeting notes, document 06/1042r0, were approved unanimously.

**Liaison reports****IEEE P1609**

Tom Kurihara was unable to attend these meetings but submitted a liaison report which is posted and is document 06/1407r1. Lee used this document to give the task group the update on 1609's status.

**ISO TC204 WG16**

Dick Roy gave a verbal liaison report on the recent activities relating to ISO TC 204 WG16 CALM. He stated that CALM is looking at starting a new group, 16.6, to address WSMP within the CALM architecture. The hope is that this work will be closely aligned with the 11p and 1609 efforts. Dick also said that CVIS is in full swing and has endorsed CALM. Daniel question if the auto OEMs had made such an endorsement and Dick said that while he had no direct knowledge he thought they had via the Car2Car consortium. Daniel did not believe that the auto OEMs had made such an endorsement.

Dick also said that industry had applied to get two blocks of 10 MHz spectrum and separately applied for to blocks of 20 MHz spectrum. Their approach to separate these applications is due to the fact that they think it will be harder to get the additional 2x20 MHz and didn't want to slow down obtaining the 2x10 MHz. (Note: During one of the Thursday sessions Dick informed the group that WG SE had approved the ITS sharing report and it is likely that Europe will allocate 5.855 – 5.925GHz for ITS services which is essentially the same spectrum as that allocated in the US.)

Dick said that what CALM was doing was similar to 802.21's work but much less ambitious. He stated that TC204 WG16 is looking into the possibility of working much closer with 802.21 in the future.

**Review of Adhoc telecon meetings held since the July San Diego meeting**

Lee stated that the goal of these telecons was to use the comments received from the failed LB to develop draft D.1. Lee then turned over this discussion to Wayne Fisher.

Wayne said that the resulting draft D1.1 which was derived from D1.0 and the comments from the LB is now approximately 1/3 the size of D1.0. Wayne then suggested that we review the documents which

were used to address comments and describe the changes needed to D1.0 to satisfy these comments. An example of this document is 06/1457.

Wayne said that one of the major changes made to create D1.1 was to eliminate Clause 20 and move what was still needed from there to Clause 17. He said that there were still some places relating to this effort that needed further review. He pointed out that Annex A is much smaller and simpler. Annex I and J will need more review.

Lothar requested that we follow a process that will make sure that we have addressed all the comments from the LB. He suggested that we first review the current draft and then review the comments to see that they have been addressed.

Wayne explained where, as editor, he got his input to create the current draft. It was pointed out that the latest draft was not yet on the server. Lee said that it was given to Harry to post earlier today. Those participating in this meeting were given a copy to work with via a memory stick with the expectation that the draft would be on the server shortly.

A discussion occurred around transmitter power levels. At the conclusion of this discussion it was determined that we could not make further progress without input from Peter Ecclesine who had indicated that 11p didn't need to make any changes in transmitter power level control as all the capability we needed was already there.

The next discussion topic was slot time. The question was do we need to state explicitly what we need for slot time and address it in coverage classes? We also discovered that the current table J.1 has a column labelled "Channel Spacing" when indeed it is describing channel width. A later discussion with Peter Ecclesine confirmed that it means channel width but has always been in the table this way.

## **Monday September 18, 2006, 19:30-21:30 Session**

Continued the review of editor inputs for formation of D1.1.

A question was raised as to the need for J.1 Table (06/1144r2) to have 20 MHz channels be defined.

A question was raised as to the need to keep change bars in the mods of D1.0 as we create D1.1. It was decided to archive the last version of the marked up D1.0 and coming out of these Melbourne meeting to start with a clean D1.1 without the change bars. This will allow us to back track if necessary but also be able to work with a more readable document.

At this point we began to go through D1.1

### **Review of D1.1**

Nothing has changed in section 3 but it needs review. The question was raised as to whether we should use WSI or WSIE in 3.196. The second issue was questioning the completeness of the definition.

At this point Lee suggested that the group recess until the next scheduled session to allow participants time to review the document which was now on the server. It was posted in the drafts folder and named 802.11p\_D1.1.pdf.

## **Tuesday September 19, 2006, 10:30-12:30 Session**

Dick Roy informed the group that in discussions with Peter Ecclesine, Peter indicated that we would not need to add text to address transmitter power control and slot time.



Currently the draft references 11k-D5.0. We discussed that if another amendment is approved before 11p, we will need to change that reference. We briefly reviewed the schedules for the active task groups and decided that we should be able to come in ahead of 11n but that we will probably need to reference 11r in our document as it is likely to be completed prior to our work.

We continued to do real time editing looking using input from those in attendance. Where questions arose Wayne added editor notes to remind us to follow up in the future.

As the group continued with the review of document 802.11p\_D1.1.pdf, Peter Ecclesine joined the discussion. The he was asked about 11p's desire to include transmitter power control and slot time text in our amendment. Peter showed the group where in the existing 11 documents this capability already existed and convinced those present that we do not need to add this in our document. What we do need to add is a row in table J.1 for our 20 MHz channels and Coverage Class information in the behaviour limits table I.3. By doing these two things we will have what we need for both transmitter power control and slot time.

Peter suggested that the group use document 06/0955r2 from 11y as an example on how to update the MIB.

### **Tuesday September 19, 2006, 16:00-18:00 Session**

It was decided that we should not spend a lot of time looking at editorial comments from the LB since the document has changed so drastically that they are likely Overtaken By Events. Also, many editorial comments are addressing what's already in 11ma which is beyond our scope to address.

Dick Roy gave an overview of utilizing UTC time for synchronization. He described how we would need to have at least three new primitives made available which would be Set, Get, and Increment. He said that other groups had expressed interest in using this capability if it was made available. He also said that this capability must already exist internally but interfaces have not been previously defined allowing external access. Dick committed to putting together a presentation and motion in time for the group to review and vote on the motion during the Thursday PM sessions. He will give the presentation during one of those Thursday PM sessions.

Assuming we get the current draft to the expected state at the conclusion of these meeting, Dick suggested that we bring some sort of a motion or vote to the closing WG plenary. He was informed that this is not possible but that Lee could, in his closing report at the plenary, advertise the current state of the draft and asks members to review and comment to the task group.

While in attendance during this session of 11p, Stuart Kerry pointed out to the editor that he should make sure that the upfront information, including the title and description, match the PAR information. He said other groups had run into trouble after passing LB when they had not addressed this aspect.

Lothar stated that he would post a presentation on congestion control with motions in time to be given at and voted on during the Thursday PM sessions.

Dick Roy brought up the fact that he is getting requests for inclusion of text unique to Europe. Lee stated that as long as the requests came in formally and in time to be included in this draft he didn't see a problem in doing so. Lee did point out the time was rapidly running out.

### **Thursday September 21, 2006, 12:30-15:30 Session**

Dick Roy gave his proposal titled TSF timer management primitives. It was posted as document 06/1542r1. Due to the time of posting the group can not vote on the motion contained in it until the PM 2

session today due to the 4 hour rule. Dick described needing the ability to sync up to an external time source which is not currently available. Currently 802.11 uses beacons to allow for synchronization but since 11p doesn't use beacons we can't use this technique. Dick believes that this capability exists with the current chips but is not externally accessible. At the conclusion of his presentation the only major discussion topic was on how we justify to the rest of the 802.11 community the need for such a capability. Dick said he had talked with others and they were interested in having this capability. He said that any short duration transaction which do not have time for association and authentication could benefit from this. The motion in Dick's proposal was deferred to the next session for discussion and voting.

Lothar presented a proposal on congestion control. It is posted as document number 06/1523r0. He talked about how the current solution will breakdown when a large number of vehicles are within communication range of each other. He gave an example of how at least 150 vehicles could be within range and showed a graph on the effects. He stated that we need three things. First we need to detect RF congestion, second we need to control it, and third we need to avoid packet collisions. After the presentation the discussion was centered around whether congestion control should be addressed in the lower layers or in the upper layers. Daniel thought that congestion control at the lower layers would not be needed as the upper layers would behave in such a way that congestion would not occur. Daniel's contention is that you will not have a high number of vehicles in proximity all trying to broadcast emergency messages at the same time, therefore they will not all be transmitting on the highest power levels. Lothar has three motions in his proposal and like Dick needs to wait until the next session before we can discuss and vote on them due to the 4 hour rule.

Wayne presented the current comment spreadsheet document number 06/0553r5 and demonstrated how you can sort on different attributes. He said that in going forward we would need to assign members the task of reviewing the current draft to see if comment categories had been adequately addressed.

### **Thursday September 21, 2006, 16:00-18:00 Session**

Lee presented document 06/1530r0 which is an update on the current status of the task group work. He said that the current draft is about 35 pages which is a significant reduction for the 59 page document submitted for LB. Also all references to 1609 and to applications and uses have been removed. He also pointed out that the group has removed text that is not needed due to its presence in 11ma.

Lee's presentation has a motion which stimulated the following discussion:

Since we took the draft 802.11p\_D1.1.pdf at the beginning of the week and began modifying it with the intent of voting on an approved baseline at the end of these session we can no longer vote on approving a new 1.1 but need to create a new document, 1.2, to vote on. After further discussion we discovered that some of the changes that we had agreed upon, in particular those relating to table additions to address slot time, had not been done. Those changes were put into the 1.2 draft which had already been posted on the members draft section. Therefore we needed to modify the motion to indicate the creation of a baseline numbered 802.11p\_D1.3.pdf which reflects all modification made to D1.0, D1.1 and D1.2. The modification to the motion included the explicit statement of the modifications made to D1.2 to create D1.3.

Lee's modified motion and the results are listed below:

#### TGp Motion

- Whereas comment resolution has resulted in very extensive revisions to the previous document,
- Move that TGp accept draft 1.2, with changes noted below to create draft 1.3, which incorporates comment resolutions proposed to date, as the current Task Group working draft.
- Changes to be made to draft 1.2:
  - Table I.3 Added a row for behavior limits set 11 and make change to add Coverage Classes 0 and

1  
Table J.1 change reg. class 13 behavior limits set to “11”

Moved by: Dick Roy  
Seconded by: Rick Noens

Results: Yes 5 No 0 Abstain 0

Motion passes

Next we addressed the motion by Dick Roy on MLME primitives for TSF Timer management which follows:

Motion:

Move to accept the proposed additions to clause 10 as presented in this document (11-06/1542r1 and to instruct the TGp editor to make these changes to clause 10 with the appropriate formatting.

Motion by: Dick Roy

Second: Lothar Stibor

Approve: 5	Disapprove: 0	Abstain: 0
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Motion passes

Next we addressed the motions brought forward by Lothar Stibor in his presentation on congestion control. The motions and results are listed below.

**Motion 1**

**Move to change subclause 7.3.2.21.2 and subclause 7.3.2.22.2 as stated below and instruct the task group editor to add the statement below to clause 7 of draft P802.11p D1.3 with the appropriate formatting:**

*Change the third sentence of subclause 7.3.2.21.2 with the following:*

STAs operating in WAVE mode shall generate a CCA report in response to a CCA Request. For all other operation modes it is optional for a STA to generate a CCA report in response to a CCA Request.

*Change the third sentence of subclause 7.3.2.22.2 with the following:*

STAs operating in WAVE mode shall generate this report in response to a CCA Request. For all other operation modes it is optional for a STA to generate this report in response to a CCA Request.

Moved: Lothar Stibor  
Second: Dick Roy

Yes: 5  
No: 0  
Abstain: 0

Motion passes

## Motion 2

**Move to add the paragraph below after the first paragraph of subclause 9.15 of draft P802.11p D1.3 and add dot11CCAMeasurementDuration and dot11CCAMeasurementInterval as dynamic values to the MIB:**

A STA operating in WAVE mode shall monitor the CCA busy fraction of the current channel regularly. The measurement is performed on the current channel every dot11CCAMeasurementInterval for the duration of dot11CCAMeasurementDuration using the CCA request and CCA report as stated in 7.3.2.21.2 and 7.3.2.22.2.

**Moved: Lothar Stibor**

**Second: Wayne Fisher**

**Yes:**

**No:**

**Abstain:**

Note: After a further discussion this motion was withdrawn by the mover with concurrence of the seconder.

## Motion 3

**Move to add the paragraph and the table below to the end of subclause 9.15 of draft P802.11p D1.3 and add dot11CongestionThreshold as dynamic values to the MIB:**

In the absence of a WBSS, the default EDCA parameter set shall be used for all STAs operating in WAVE mode, as long as the CCA busy fraction of the last measurement is below dot11CongestionThreshold. If the last measurement of the CCA busy fraction is equal or above dot11CongestionThreshold, the EDCA parameter set in table p5 shall be used.

**Table p5— congestion aware EDCA parameter set in the absence of a WBSS**

ACI	CWmin	CWmax	AIFSN	TXOP Limit
0	aCWmax	aCWmax	9	1
1	aCWmax	aCWmax	6	1
2	aCWmax	aCWmax	3	1
3	17*aCWmin	aCWmax	2	0

**Moved: Lothar Stibor**

**Second: Guenael Strutt**

**Yes: 1**

**No: 2**

**Abstain: 3**

Motion fails

At this time since we were at the 18:00 hour Lee officially adjourned the meeting with unanimous approval of those present.

**IEEE P802.11  
Wireless LANs**

**TGr Meeting Minutes Sept 2006 Session**

Date: 2006-09-25

**Author(s):**

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**Abstract**

Minutes of the IEEE 802.11 Task Group r meetings recorded during the September 2006 Interim Session in Melbourne, Australia.

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**Monday September 18, 2006**

10:30 am

Call to order

Agenda for this session is 06/1440

Review IEEE 802 policies and procedures for Intellectual Property.

The following slides from 06/1440 were presented to the Task Group:

The slide titled “IEEE-SA Standards Board Bylaws on Patents in Standards”

The slide titled “Inappropriate Topics for IEEE WG Meetings”

The slide titled “Copyright”

The IEEE holds the copyright for all submissions at these meetings.

Does anybody have any questions about the patent policy?

None

Does the WG chair need to be aware of any patents pertaining to this group?

None

Attendance reminder.

Approval of meeting minutes:

Move to approve minutes from July 2006 Session – document 11-06-0949r1

Any objection?

None – minutes approved

Move to approve minutes from Aug-Sept teleconferences – document 11-06-1143r1

Any objection?

None – minutes approved

Agenda discussion 11-06-1440r1:

Clint has asked that all State Machine presentations be scheduled such that they not conflict with TGw sessions.

Some agenda items which had been discussed in the past were added to this agenda due to an error in previous rulings.

Kapil would like to add doc 06/1439r0 to the agenda for Wednesday.

Nancy has a document 06/1456 on KCK Re-use she would like to present – added to Monday AM2.

Suman would like to add a discussion on the Reservation Option for Tuesday

Presentation – doc 06/637r0 & 06/695r0 – Dan Harkin – Secure 3-Party Protocol

Discussion:

The MDC is not one of the 3 parties of the protocol during the FT. Only R0KH, Target AP & STA

How does the key get derived?

Why does the R0KH trust the Target AP?

There is an assumed pre-existing SA between the R0KH & the TAP.

Do you mean R1KH or Target AP?

The Target AP is a candidate R1KH until it has been authorized to be one.

Is the purpose to get an agreement between STA & R0KH on who is authorized to be an R1KH?

Yes, plus to distribute the PMK-R1 & its attributes.

Who authorizes the R1KH?

Both the STA & R0KH grant authorization.

There is some trust relationship between the STA & R0KH, but liveness is needed.

Liveness is not needed here. There is no threat from a replay (idempotent).

Does this assume only one R0KH in the MD?

There could be more than one, but after a STA crash, the STA will not know about any previous R0KH.

If there is more than 1 R0KH, then there will be a large number of trust relationships between all R0KH's & R1KH's.

Yes, but we do still have to support the fat AP model.

How would this work with a push model? This seems to be Pull only.

I would like to come up a good Push model to complement this.

Why is encryption needed here?

It protects Ns, so that it cannot be used by attacker to generate the AUTH value generated by the R1KH.



At what time does the STA decide when to issue this Pull exchange?

This is a decision that must be made by the STA based on whether it has visited this R1KH before (cached).

At some point the TAP needs to indicate to the STA that it does not have the PMK-R1.

I agree, but that needs to be there regardless of whether this protocol is used or not. I feel that needs to be added to the current draft.

**MOTION at 11:45am: Accept the submission contained in document 11-06-0637-00-000r-secure-key-distribution-and-authorization-protocol.doc, and instruct the editor to incorporate the changes into the draft.**

**Mover: Dan Harkins**

**Second: Kevin Hayes**

**Discussion:**

**None**

**No objection to calling the question**

**Result: 6-2-6 Passes**

Presentation – doc 06/1456 – Nancy Cam-Winget – Can KCK Be Used to Protect 802.11r Frames?

Discussion:

On slides 4 & 5, is there a scenario where the frames can be exactly the same?

The MAC addresses are not under our control. There is a chance that they could collide.

Have you considered pre-pending the label string (ensuring it could not be constructed to appear as an EAPOL-Key frame), followed by the EAPOL-Key frame?

This will need to be looked at.

Why 8 bytes of reserved?

This was from the 802.11i. And some of the bits are now being used in the DLP draft.

Some informative text would be helpful to define the cryptographic boundary, but it's up to the implementers to get it right. It can't be externally verified and it does not affect interoperability. All we can do is say "beware".

Discussion on 11-06-0685-00-000r-resource-query-procedures.doc (Comments 1195 & 1237):

The Comment requests to add a mechanism for a Resource Query such as stated in doc 11-06-0245-00-000r-simple-qos-resource-query.doc.

There exists a problem when an AP crashes between the time of the query and the time of Re-association.

There is no guarantee that a resource will still be available after it is queried

The reason for wanting to add this was to allow the STA to determine the type of QoS supported by the AP.

The problem with the lack of 11e mode advertisement should be addressed by an additon to the base .11 spec, not added to TGr.

It is not resolving any substantial TGr problems.

There may be an issue with the different TSPEC formats used between the Wi-Fi Alliance and 802.11e

**MOTION at 12:15: To reject comments 1195 and 1237 with the following comment resolution: "The suggested resolution is not solving any substantial TGr problem."**

**Mover: Rajneesh Kumar**

**Second: Nancy Cam-Winget**

**Discussion:**

**None**

**No objection to calling the question.**

**Result: 9-1-1 Passes**

Recessed until 7:30pm

**Monday September 18, 2006**

7:30 pm

Presentation: doc 11-06/1337r1 – Dorothy Stanley – SHA-256 Support

Discussion:

There was some discussion on the teleconference on what would be required to support SHA-256 to a non-FT RSNA. The second part of the presentation covers these changes.

There is concern that a change like this would be out of scope for TGr.

RFC 4634 contains 'C' code for all the SHA algorithms.

Is this necessary? SHA-256 is CPU intensive. We're using an HMAC construction. I feel that an HMAC-SHA-1 is not vulnerable.

NIST has indicated that no new products as of 2010 will be FIPS compliant using SHA-1 with or without HMAC.

Given the resource requirements, handset vendors may be concerned with SHA-256. There are other ways to increase the security of SHA-1 (e.g. whitening), without the CPU requirements of SHA-256.

Adopting SHA-256 enables products to be FIPS compliant in 3.5 years. We need to work with NIST.

Currently the only choice per NIST for 2010 FIPS compliance is SHA-256.

Another option is to adopt AES-CMAC.

SHA-256 will be needed to verify signatures, although this is not performed that often.

In terms of computation & logic, AES-CMAC is a better choice.

TGw has already adopted AEC-CMAC to authenticate management frames.

Dorothy will revise the text to use AES-CMAC.

There is value in having this be generic rather than specific to TGr. If we want this to be specific to TGr, then we will need more text will be needed to make it conditional. We need a way of negotiating this independent of TGr.

The text we looked at for this is in clauses 8A.5.3 & 8A.5.4

Do we want to make AES-CMAC applicable to non-FT RSNA's

Straw Poll – Dorothy Stanley : Should TGr add AES-CMAC as a MIC to non-FT RSNA's

Discussion:

After looking into this, we may find that this could be very difficult to implement.

Result: 7 – 0 – 4

Presentation – 06/1317r1 – Kapil Sood – Security Architecture - Single Key Hierarchy  
Instantiation per MD

Discussion:

There were concerns raised if the STA crashes and establishes a new PMKR0-SA.

**MOTION at 8:33pm: Accept the submission contained in document 11-06-1317-01-000r-security-architecture-single-hierarchy-instantiation.doc, and instruct the editor to incorporate the changes into the draft.**

**Mover: Kapil Sood**

**Second: Nancy Cam-Winget**

**Discussion:**

**None**

**Result: 12-0-2 Passes**

Presentation – doc 06/1147r0 – Kapil Sood - TGr Security Architecture – Unique PMK-R1  
Names

Discussion:

What is the point of re-hashing the Salt with the SSID, MDID, etc.?

This does not address a LB comment. It was something that we decided we needed during LB comment processing.

**MOTION at 8:38pm: Accept the submission contained in document 11-06-1147-00-000r-security-architecture-unique-pmk-r1names.doc, and instruct the editor to incorporate the changes into the draft.**

**Mover: Kapil Sood**

**Second: Rajneesh Kumar**

**Discussion:**

**None**

**Result: 9-0-4 Passes**

Chair: Any objection to recessing until 8:00am tomorrow morning?

None

Recessed until 8:00am Tuesday.

**Tuesday September 19, 2006**

8:00 am

Presentation: doc 06/1142r6 - Kapil Sood – TGr Security Architecture State Machines

Discussion:

This looks good. The state machines in 802.1X and 802.11i were implementable. Can we make this a goal for the TGr state machines as well?

Yes, that can be a goal. The main goal is interoperability.

Are there components of this submission that we can agree on now?

Yes, but the document has not been on the server long enough to vote on it, plus, the machines are inter-connected. We cannot change one without it affecting another.

Is there anyone against putting state machines into the draft?

No response

Chair: Any objection to going into ad-hoc mode until 9:50?

None

Call to order

Chair: Any objection to recessing until 8:00am tomorrow morning?

None

In recess until 1:30pm

**Tuesday September 19, 2006**

1:30 pm

Chair update:

Version r2 of the agenda has been uploaded.

A new time slot on Wed at 1:30pm was added – released by TGM

Approval of Minutes

Motion to approve minutes of Aug to Sept 2006 Teleconferences r2

No objections

Chair: Any objection to enter into ad-hoc until 3:25?

None

Call to order

State Machine document update:

How close are we to having a submission that we could vote on?

Tomorrow

Chair update:

In tonight's session we will have the presentation on Pre-Authentication.

Recessed until 7:30pm tonight

**Tuesday September 19, 2006**

7:30 pm

Presentation: doc 06/832r3 – Dorothy Stanley – TGr Pre-Authentication

Discussion:

In an enterprise deployment, the crossing of MD's is infrequent. Is it worth the effort for a corner case, rather than just taking the longer roam time for that one handover?

It depends on the deployment whether this type of roam is frequent or infrequent. This also provides the capability to separate the authentication from the roam.

Metro hot-spots may result in frequent inter-domain roaming.

The impact of an inter-MD roam to the user is only if they are on a call.

This is a tool to reduce the roam time if needed, so it is worth the added protocol.

Another motivation is due to the lack of a Key Distribution Protocol in TGr. This applies to the fat AP model.

It is possible to have TGr with fat AP's, but environments do exist where you won't. In fat AP environments, key caching could reduce the roam times and be valid for a day.

A key cache may be less than a day per policy.

I assume a new sub-type could be defined to allow the use of the General Encapsulation mechanism to carry RRB frames?

Yes.

How does the STA choose which AP to select?

It is up to the STA to make that decision based on the information available from the Target AP.

Where is it specified that this is only to be used across MD's, not within? How is this enforced? We need to enforce only one key hierarchy exists per MD.

Do you have a suggestion as to how much time prior to a roam a pre-auth should be invoked?

It is up to the STA. It could be done when the STA powers up in the morning, or it could be done at the time of the roam.

The STA may not know about the new MD until very late, and by the time the STA initiates pre-auth, it may be too late to finish it.

That same argument can be made against FT.

There are more transactions involved with pre-auth.

So if TGr pre-auth could happen in the morning, the STA could also do full 802.1X auth with each AP.



Yes, but the STA would need to register with each of those APs in order to do that.

How many customers actually use Pre-auth? None of our customers use it.

It is tested for WiFi Certification

What are the reachability requirements to allow pre-auth to occur across MD's

Reachable via layer 2

How do we make sure they are reachable?

That is a deployment issue.

A MD guarantees L2 reachability. How do we do this with pre-auth across MD's?

If the target AP is not reachable, then the pre-auth will fail and the STA will need to fall-back to over the air.

**MOTION at 8:15pm: Accept the submission contained in document 11-06-0832-03-000r-preauthentication.doc, and instruct the editor to incorporate the changes into the draft.**

**Mover: Dorothy Stanley**

**Second: Jouni Malinen**

**Discussion:**

**None**

**Result: 6/6/5 Fails**

Discussion on how to address comment 839:

A submission will be need in order to either accept or reject

Chair: Any objection to entering ad-hoc mode until 9:25pm?

None

Recessed until 9:25pm

Call to order:

State Diagram update:

The ad-hoc group has finished the State Diagrams document.

Chair: Any objection to recessing until 8:00am Wednesday?

None

Recessed until 8:00am Wednesday.

Wednesday September 20, 2006

8:00 am

Agenda discussion  
Attendance reminder

Presentation: doc 06/1479 & 06/1483 – Jarrko Knecht – More Data Bit

Discussion:

The suggested resolution indicates that no reason is given for the difficulty in implementing the More Data bit.

We have had much discussion on this. In order for this to be useful, then the queues will need to be inspected much further back in the network than is possible.

If the More Data bit is set, how does the STA know if it indicates buffered data in PS or buffered data for FT?

It depends upon the mode the STA is in at the time. In either case, it indicates buffered data exists on the AP.

The ambiguity exists if the More Data bit is not set. The STA does not know if it is simply not supported or if there is no buffered data.

A capability bit could be defined to indicate support.

Is the extra complexity worth the small improvement that may be gained?

Straw Poll: Which choice is more preferable for TGr:

- Add a capability bit for signalling support of the More Data bit in non-PS mode: 2
- Always support More Data Bit in non-PS mode if AP supports FT: 5

A new submission will prepared to address this.

<Discussion on Presentation continued>

*Row 8 (comment 1432):*

Where is the timing information?

The More Data bit will allow the STA to make a decision as to when to handover.

This is not the only input to the handover decision.

The proposed resolution by the commenter is not sufficient.

*Row 9 (comment 1440):*

This bit is difficult to implement in many of today's chipsets.

Wouldn't that be true in PS mode?

No, traffic for STA's in PS mode is queued separately for that STA.

When a STA enters in and out of PS for unscheduled APSD, the AP will need to know how to set the More Data bit.

The APSD Service Period consists of transmitting only frames queued during that period.

I would argue that with every implementation, what this proposal is asking for is cannot be supported.

At some point in the future we could have architectures that support this feature.

There are architectures that can support this.

The same race condition exists for PS – the header can be populated at the time a frame arrives and the bit not set.

For a burst of traffic that is queued in a switch one hop away, this will not help. All the traffic will be lost.

We have no empirical data to prove this is useful.

The same argument can be said of any optional feature.

A reminder that the More Data bit is already in the draft. The burden is now on those who want to remove it to provide the evidence that it is not needed.

*Row 10 (Comment 1441)*

The resolution should be changed to say declined with the reason that the data is not supplied.

*Row 11 (Comment 1442)*

Not protecting the More Data bit can prevent a STA to FT when it should.

The same vulnerability exists under PS mode. The STA may use the More Data bit PS mode to make a roam decision.

An attack can be launched by a man-in-the-middle changing the More Data bit to one.

Can you describe how an attack can be executed? This seems impossible.

I don't think so. This is the reason for TGW. Launching these types of attacks is trivial.

The proposed resolution does not properly address this comment.

**MOTION: Reject comment 1441 with the following reason:**

**“Rejected; the feature is already in the draft. In order to remove this feature, the commenter needs to supply timing analysis indicating that the feature is not useful”.**

**Mover: Jarkko Kneckt**

**Second: Frank Ciotti**

**Discussion:**

None

Result: 4-4-3 Fails

Discussion on Recirculation Goals:

Chair: It appears that we are in a deadlock. Perhaps the way to move forward to advise the opposing parties to come to a consensus.

If we are attempting to go to Recirc this session, then we have to close these comments. Is it more important to get the document out with the significant changes that have been made, or dwell on these issues?

There items that I support in the draft, and items that I don't. At some point we have to be happy (or unhappy) with what is in the draft for the advancement of the TG and draft.

We have lost sight of the complexity of the draft. If it takes 4 months to gain consensus, then that is how long it takes. I would like to see all comments resolved before we move forward.

We already have an 87% consensus on the draft.

With very contentious issues, like the More Data Bit, the best way to reach consensus is to go out for LB.

MOTION: Accept the comment resolution for comments 208, 404, 407, 1431, 1432, 1440, 1441 and 1442 in 11-06-1479-00-000r-more-data-bit-comment-resolution.xls

Mover: Dorothy Stanley

Second: Jarkko Kneckt

Discussion:

Voting 'Yes' does not preclude discussions going on in parallel to resolve these.

I don't want people to believe that there are no issues here.

We agreed that a different resolution was necessary for some of these comments. This motion does not address these.

Results: 4-1-11 Passes

Presentation: doc 06/1142r7 – Kapil Sood – TGr Security Architecture State Machines

Note: The vote on this submission is scheduled to take place in one of today's afternoon sessions.

Chair update:

Comment: With the possibility of there being more than one TG going to LB after this session, I would suggest that that if we do go out for Recirc, that we make it more than a 15 day ballot.

The chair has requested an additional session at 1:30pm this afternoon. The ruling for the change to the agenda will take place at the mid-session Plenary. Our next regularly scheduled meeting is at 4:00pm today.

Chair: Any objection to recessing until either 1:30pm or 4:00pm (based upon vote during mid-session Plenary)

None

Recessed.

Wednesday September 20, 2006

1:30 pm

Agenda discussion

Presentation: doc 06/1503r0 – Rajneesh Kumar – Pre-Auth in TGr

Discussion:

We should not change the base spec as this would preclude future changes related to this.

Do we want to preclude it forever?

The spec can be changed again at any time

In the interest in moving forward, this resolves the comment.

**MOTION at 1:46pm: Accept the submission contained in document 11-06-1503-00-000r-pre-auth-in-tgr.doc, and instruct the editor to incorporate the changes into the draft.**

**Mover: Rajneesh Kumar**

**Second: Kapil Sood**

**Discussion:**

**None**

**Result: 9-1-4 Passes**

**MOTION at 1:50pm: Accept the submission contained in document 11-06-1142-07-000r-ft-security-architecture-state-machines.doc, and instruct the editor to incorporate the changes into the draft.**

**Mover: Kapil Sood**

**Second: Dorothy Stanley**

**Discussion:**

**None**

**Result: 12-0-1 Passes**

Discussion on Comment 213:

This comment is similar comment 1442 which we resolved this morning.

We could apply the same resolution to this motion.

MOTION at 1:56pm: Reject Comment 213 with the following resolution: “Decline: it is not clear how the denial-of-service attack would be performed. The More Data bit is used only to provide buffer status information and does not lock terminal to wait as described in the comment. The STA shall operate according to standard.”

Mover: Rajneesh Kumar

Second: Nancy Cam-Winget

Discussion:

Earlier we described a man-in-the-middle attack. Doesn't the same attack apply here?  
Yes, this is true.

The More Data bit is only informational. The standard does not require a STA to linger on an AP if the MD bit is set. A STA may choose to do so, in which case this would result in an attack. The motion text should be amended to indicate this.

I would agree.

MOTION TO AMEND at 2:05pm: By striking the sentence “It is not clear how the denial-of-service attack would be performed.” and replacing it with “A particular implementation may be subject to the denial of service described in the comment. However, the standard does not require the More bit to be used in this fashion.”

Mover: Bob O'Hara

Second: Pat Calhoun

Discussion:

None

Result: 11-0-4 Passes

New MOTION at 2:09pm: Reject comment 213 with the following resolution: “Decline. A particular implementation may be subject to the denial of service described in the comment. However, the standard does not require the More bit to be used in this fashion. The More Data bit is used only to provide buffer status information and does not lock terminal to wait as described in the comment. The STA shall operate according to standard ”

Mover: Rajneesh Kumar

Second: Nancy Cam-Winget



Discussion:

None

Result: 10-0-4

MOTION TO AMEND SOMETHING PREVIOUSLY ADOPTED at 2:14pm: Relating to the motion to adopt 11-06-0637-00-000r-secure-key-distribution-and-authorization-protocol.doc by striking the text “, and instruct the editor to incorporate the changes into the draft” and preceding with “Not”

Motion would read: “Not accept the submission contained in document 11-06-0637-00-000r-secure-key-distribution-and-authorization-protocol.doc.”

Mover: Jouni Malinen

Second: Nancy Cam-Winget

Discussion:

What is the motivation for this amendment?

The submission instructs the editor to make changes to parts of the draft which have been removed.

Can you cite an example?

Yes, the MDC.

It would have been better to simply strike the reference to MDC. It is orthogonal to the protocol described in the submission. The MDC facilitates the construction of the SA.

Do you believe there will be interop issues if this is not defined?

There will be larger interop issues if we don't have a key distribution protocol. A key cannot be sent in the clear.

In favor of the amendment. We have had many discussions on this. The IETF CAPWAP WG is working on this. Plus, the submission provides only a pull solution, not push.

Can Dan make another motion after this motion?

There are time constraints that have to be taken into consideration for the 4 hour rule.

At least for enterprise applications, in addition to the to key, the VLAN , QoS, ACL, etc. must be sent as well. The CAPWAP work is addressing this. Plus, having only a pull model is restrictive.

CAPWAP does not provide the authorization to allow the PMK-R1 to pull the key. The supplicant has no way of knowing if a key hierarchy has been compromised.

Regarding the push model, this is not the only way to do this. A push model is something we should work on. I don't think the lack of a push model makes a pull model solution unacceptable.

Is the Target AP informed about the AP the STA roamed from?

No.

The proposal provides a mechanism for the supplicant to determine if the target AP is an authorized R1 key holder.

Call the question

Any objection?

None

Result: 12-8-4 Fails

Chair: Any objection to recessing until 4:00pm?

None

Recessed until 4:00pm

Wednesday September 20, 2006

4:00 pm

Adenda discussion:

Suman Sharma requested that the Reservation Option presentation be removed from the agenda.

Presentation: doc 06/1439r0 – Marc Jalfon – Mechanism to update current session parameters

Discussion:

Will TGw be protecting the Re-Association frame?

No, this is considered to be performed by TGr.

How much of a disruption is there?

As soon as the AP receives the Re-assoc request, it destroys any SA it has for that STA.

If the spec states that the receipt of a Re-assoc request causes the AP to destroy an SA for a STA, that is an attack that needs to be addressed.

We are not addressing that with this submission.

Clause 8.4.10 states the AP shall delete the PTKSA.

Can you describe what security parameters you plan to update?

We describe only updating session parameters listed on slide 7.

How often are the parameters listed on slide 7 going to change? Those are usually fixed parameters. The only real parameter that may change is the Listen Interval. It seems like a lot of protocol overhead for just this one purpose.

Supported Rates may need to be changed for power considerations.

How is the related to FT?

It is related to Re-association. This will allow us to narrow the DoS attack.

I don't think it is a good idea to change the rates without performing a full Re-association.

It already exists, but in a slow way.

Having frames buffered could cause a problem. The AP would have to modify the buffered frames.

I don't believe the old 5.4.2.3 allows this. I believe the AP would discard the buffered frames.

Wouldn't it be better to bring this to TGw?

TGw is only addressing post-key establishment protection.

You're right, but part of the solution belongs in TGr.

Is this intended to be mandatory or optional?

Not sure – make question part of the straw poll.

Straw Poll: Does TGr want to see a proposal based on the presentation in 11-06-1439-00-000r-mechanism-update-current-session-parameters.ppt?

Mandatory: 0

Optional: 11

Not at all: 5

If a motion were made on this, would the chair rule this out of scope?

Chair: Unsure at this time.

Presentation: doc 06/1511r0 – Dorothy Stanley – AES-CMAC MIC Support

Discussion:

We should probably be consistent with the wording used in TGw of AES128-CMAC.

What does NIST use?

AES-CMAC is used by NIST and the RFC.

I received a comment from NIST that it should be AES128-CMAC.

**MOTION at 4:40pm: Accept the submission contained in Part 1 of document 11-06-1511-00-000r-aes-cmac-mic.doc, and instruct the editor to incorporate the changes into the draft..**

**Mover: Dorothy Stanley**

**Second: Jouni Malinen**

**Discussion:**

**None**

**Result: 19-0-4 Passes**

Discussion on Part 2 of 06/1511

In clause 8.5.2 of the submission, there seems to text missing.

This refers to text that was just voted in in Part 1

Do we go to ANA for the RSNA capability bits?

Yes

MOTION at 4:47pm: Accept the submission contained in Part 2 of document 11-06-1511-00-000r-aes-cmac-mic.doc, and instruct the editor to incorporate the changes into the draft.

Mover: Dorothy Stanley

Second: Nancy Cam-Winget

Discussion:

For: This motion will target NIST and future security requirements

Result: 20-0-4 Passes

Appointment of Chair Pro-Tem

Presentation: doc 06/792r2 – Clint Chaplin – Reserve Option

Discussion:

The normative text is not consistent with the mandatory reservation – the PICS is not updated.

In the beginning of the submission, it refers to these options being set via the MIB, but I don't see a MIB object for it.

The name has been changed.

MOTION at 5:00pm: Accept the submission contained in document 11-06-0792-02-000r-reserve-option.doc, and instruct the editor to incorporate the changes into the draft.

Mover: Clint Chaplin

Second: Rajneesh Kumar

Discussion:

Against: There is another proposal being worked on that combines these two, and I would prefer to wait to see that proposal.

Any objection to calling the question?

None

Result: 1-13-11 Fails

Presentation 06/1328

Withdrawn from agenda

Presentation: doc 06/999r3 – Clint Chaplin – Make Before Break or Tentative Reassociation

This presentation is an addition to the existing draft. There is now a MakeBeforeBreakReassociation IE added to Reassoc Req & Resp frames.

Make before break was part of the down selection process.

Discussion:

In states 3a & 3b, how does this interact with the 802.1X state machine, e.g.; when the port is open.

The Target AP simply forwards the 1X frames to the AS.

This proposal was eliminated as part the down selection process. It is out of scope.

How will the ethertype encapsulation accommodate payload larger 1486

Decrease the 802.11 fragmentation threshold.

Is there any empirical data to prove that this is better than what is in the draft currently?

No empirical data, it is simpler. All of the existing 11i security can be reused which has already been scrutinized.

The security claims for the 11i may be overstated.

The TGr PAR claims that we cannot decrease security. If we use TG<sub>i</sub> then we can guarantee this.

Wrt empirical data, there is none for the existing protocol we have.

This proposal is completely interoperable and is simple, which is a big advantage.

The TG is working with an approved draft. There is an obligation to complete the draft. Going with something like this is not moving in that direction. This appears to be a way to sneak in a proposal that was already eliminated.

Earlier we stated that the onus is on those who want to remove something from the draft.

This comment does not ask for empirical data, the other one referenced does.

We adopted what we have in TGr without empirical data.

The comment was a blanket statement.

But the suggested resolution was specific.

This is just one way that the comment can be resolved. We could simply agree to decline the comment.

MOTION at 5:33pm: Accept the submission contained in document 11-06-1443-01-000r-make-before-break-tentative-reassociation-replace.doc and instruct the editor to incorporate the changes into the draft.

Mover: Clint Chaplin

Second: Dorothy Stanley

Discussion:

Against: This goes against the work that has been completed by the TG so far, and it has already been declined.

Against: This doesn't foster a good environment for the Task Group.

For: This is a good sanity check. It makes us ask the question - what do we really get with the current key hierarchy? If this meets our PAR and is simpler, we owe it a chance.

All this was discussed during the down selection and it was decided it was lacking. We don't need to re-cover that ground. This is an attempt to make an end-run of the procedures of this TG. The majority has approved the mechanism that is in the draft now. Making this change may result in not having a draft at all. I strongly suggest we do not approve this motion,

I too would like to see the draft move forward. But we have a lot of assumptions built-in on the back end with the current draft. These are things we did not consider during the time of the down-selection.

The proposals we had during the down-selection were just descriptions. Now that we are further along with the protocol design, we realize that the solutions were not as attractive as we once thought.

The comment of us dropping down to not having a draft is not true. We will drop back to the last LB which did pass, which was draft 2.0, as was discovered with TGe.

I don't believe that is in our operating procedures. I believe TGe had that as part of its operating rules.

Any objection to calling the question?

None

Result: 3-16-5 Fails

MOTION at 5:49pm: Accept the submission contained in document 11-06-0999-03-000r-make-before-break-tentative-reassociation.doc, and instruct the editor to incorporate the changes into the draft.

Mover: Clint Chaplin

Second: Stuart Kerry

Discussion:

The same comments for the previous motion apply to this motion as well.

Result: 3-16-7 Fails

Chair handed back to Clint Chaplin

Comment: It would be nice if the chair would only allow agenda items that would help move the TG forward.

Chair: That would require a motion

Chair: Any objection to recessing until 8:00am Thursday?

None

Recessed until 8:00am Thursday



Thursday September 21, 2006

8:00 am

Chair update:

Recirculation timing considerations.

15 Comments remain w/o a resolution. 14 are in a single group. The editor can have a draft ready by 11:00am if we resolve all 15.

MOTION at 8:14am: Accept as the resolution for comment 839 the following: "Accepted in principle. Text changes given in 11-06-1503-00"

Mover: Rajneesh Kumar

Second: Nancy Cam-Winget

Discussion:

None

Result: 6-0-4 Passes

MOTION at 8:17am: Accept as the resolution for comments 931, 954, 978, 980, 987, 988, 1009, 1019, 1049, 1058, 1131, 1147, 1285 the following: "Accepted. Text changes given in 11-06-1142-07"

Mover: Kapil Sood

Second: Dorothy Stanley

Discussion:

For: 06/1142r7 provides enough detail to perform a security analysis

For: I applaud the effort put into this

Result: 9-0-0 Passes

MOTION at 8:22am: Accept as the resolution for comment 33 the following: "Accept in principle: submissions accepted by the task group have improved the draft of IEEE 802.11r. The Task Group believes that the improved draft is no longer overly complex, no longer unwieldy, no longer hard to understand, and now meets the requirements of the PAR."

Mover: Rajneesh Kumar

Second: Dorothy Stanley

Discussion:

There have been many submissions to clarify and clean-up the existing text. With 06/1142 being adopted, we now have the means for a security analysis to take place.

Any objection to calling the question?

None

Result: 9-0-0 Passes

MOTION at 8:33am: Motion to request the technical editor to create an updated draft incorporating all approved changes.

Mover: Dorothy Stanley

Second: Kapil Sood

Discussion:

None

Any objection to calling the question?

None

Result: 10-0-1 Passes

Location of October ad-hoc Meeting

Chair: Any objections to hosting the October ad-hoc in Toronto?

I would like to offer the Bay area as an optional location

Straw Poll: Location of the October 17-19 Ad hoc which people **can** attend.

Toronto: 4

SF Bay Area: 8

NIST Maryland: 3

Straw Poll: Location of the October 17-19 Ad hoc which people **cannot** attend.

Toronto: 4

SF Bay Area: 0

NIST Maryland: 3

Intel has offered to host the Bay area meeting. Meeting information will be posted to the reflector.

Chair update:

The agenda for this afternoon is to approve the comment resolution spreadsheet, approve the draft, and vote to go to recirculation.

Chair: Any objection to recessing until 1:30pm

If we can only vote at 3:00pm, why not recess until 3:00pm?

If we get the draft from the editor earlier than 11:00am, then we may be able to vote earlier than 3:00pm

Recessed until 1:30pm

Thursday September 21, 2006

1:30 pm

Chair update:

Attendance reminder

There is one motion we can make now, and another we can make at 2:15pm

MOTION at 1:37pm: To accept 11-06-0537-33-000r-d2-comments.xls, with the comment resolution to comment 876 changed to "Accept", as the comment resolutions of LB82 comments

Mover: Jouni Malinen

Second: Bob O'Hara

Discussion:

None

Any objection to calling the question?

None

Result: 8-0-2 Passes

Chair: Any objection to recessing until 2:15pm?

None

Recessed until 2:15pm

Called to order 2:15pm

Discussion on wording of Recirculation motion:

Do we know if the draft is complete?

We have resolved all the comments.

I believe we do know that the draft is not complete. We should word the motion such that all the comments from LB82 have been resolved.

MOTION at 2:15pm: Mover: Instruct the technical editor to rename 802.11r draft 2.3 as 802.11r draft 3.0. Having addressed all comments arising from LB82, Task Group r resolves to forward 802.11r draft 3.0 to the working group for the purpose of conducting a 15-day working group recirculation letter ballot. The purpose of the working group recirculation letter ballot is to forward the draft to sponsor ballot.

–**The text of the motion to be presented to the working group will be** “Move to authorize a 15-day Working Group Recirculation Letter Ballot of 802.11r draft 3.0 to start no later than 09/27/2006, asking the question “Should the 802.11r draft 3.0 be forwarded to sponsor ballot?””

Mover: Kapil Sood

Second: Jouni Malinen

Discussion:

For: I congratulate the work done over the last 6 months to resolve these comments.

Any objections to calling the question?

None

Result: 17-0-0 Passes

Chair update:

Any further items for the agenda?

None

We have an ad-hoc scheduled for October 17-19. If needed, we can schedule one in December as well.

Comment: Do we have the weekly conference calls scheduled?

Yes

Comment: Even during the LB?

The chair can cancel those if necessary.

Chair: Any objection to adjourning?

None

Adjourned

## IEEE P802.11 Wireless LANs

### September 2006 Mesh Minutes

Date: 2006-10-19

**Author(s):**

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### Abstract

Minutes of the meeting of the IEEE 802.11 ESS Mesh Networking Task Group held at the Melbourne Convention Centre in Melbourne, Australia, on September 18<sup>th</sup> to 21<sup>st</sup>, 2006, under the TG Chairmanship of Donald Eastlake III of Motorola Laboratories. Minutes were taken by Frank Ciotti and Dee Denteener. The Minutes were reviewed and edited by Stephen Rayment and Donald Eastlake III. The final Agenda for the meeting is in document number 11-06/1140r12. The Closing Report is in document 11-06/1549r0.

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## Minutes

### **Session I, Monday September 18<sup>th</sup>, 13:30-15:30, Room Bellarine 3**

The Chair called the session to order at 13:30.

The Agenda for this meeting is in document 11-06/1140r5

The Chair reminded everyone to use the attendance system.

The Chair asked for volunteers to serve as Temporary Secretary. Frank Ciotti was the only volunteer and was appointed for this session.

The Chair reviewed the IEEE 802 and 802.11 Policies and Procedures on Intellectual Property and Inappropriate Topics. 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 reviewed the IEEE Anti-trust Statements.

The Minutes of the July 2006 meeting, document 11-06/1007r0, were approved by unanimous consent.

The Minutes of the Teleconferences;

August 2, 2006 11-06/1146r0

September 6, 2006 11-06/1377r0

Were approved by unanimous consent.

The Chair reviewed the Agenda for the session using document 11-06/1140r5. There was general agreement

The Tuesday evening session was designed as an RFI Session

The Chair reviewed the TG process using document 11-06/1386r1

Presentation "Ambiguous terms in IEEE 802.11s/D0.03" 11-06/1371r0 Guido Hiertz

Straw Poll:

Shall we change the Draft so there is only one entity term "MP"?

For: 10 Against: 3 Abstain: 9

Presentation "Co-existence problem of 802.11s Congestion Control" 11-06/1376r1 Guido Hiertz

The Chair recessed the session.

### **Session II, Tuesday September 19<sup>th</sup>, 10:30-12:30, Room Corryong 1**

The Chair convened the session at 10:30

The Chair reminded all to use the attendance system

Frank Ciotti again volunteered and was again appointed Temporary Secretary.

The Chair announced that additional TGs sessions may be announced at the mid-session 802.11 plenary



Presentation: “Mesh Deterministic Access (MDA) Optional IEEE 802.11s MAC scheme Simulation results” 06/1370r0 Guido Hiertz

Presentation “Overview of Broadcast Power Save Optimizations for 802.11s Mesh Networks” 11-06/1351 Tony Braskich

Presentation “Connectivity Reporting Mechanism” 11-06/757r1 Jarkko Knecht

The Chair indicated that a Motion on this proposal will be made during the evening session. There was no objection.

Presentation “Proposed resolution texts for CID 158,219,222,223,227” 11-06/1476r0 Kazuyuki Sakoda

The Chair asked if there were any objection to placing motions for these resolutions on the agenda for the Wednesday 1:30pm session. There were none.

The Chair recessed the session.

### **Session III, Tuesday September 19<sup>th</sup>, 16:00-18:00, Room Corryong 1**

The Chair reviewed the progress to date, the presentations for this session and reminded everyone to use the attendance system

Presentation “11i PSK use in 11s: Consider Dangerous” 11-06/1446r1 Dan Harkins

Straw Poll

PSK authentication as defined by 802.11i is inappropriate for use in 11s and it should be replaced.  
For: 4 Against: 3 Don't Know: 17 Don't Care: 1

Presentation “Efficient Mesh Security and Link Establishment” 11-06/1471r2 Steven Conner, Tony Braskich (corresponding text is in 11-06/1470)

Presentation “CCF works with PSM and MDA” 11-06/1421r1 Na Shan

The Chair indicated that a Motion to accept this submission will be added to the Agenda for tomorrow. There was no objection.

Presentation “Submission for CID 66” 11-06/1415r0 Zhang Junping

The Chair indicated that a Motion to accept this submission will be added to the Agenda for tomorrow. There was no objection.

The Chair recessed the session.

### **Session IV, Tuesday September 19<sup>th</sup>, 19:30-21:30, Room Corryong 1**

The Chair reminded people to record their attendance.

The Chair called for volunteers to be Temporary Secretary. Only Dee Denteener volunteered and he was so appointed by the Chair.

Presentation “Proposed Text for Resolution of CIDs 30, 31, 34, and 179” 11-06/1425r0 Michael Bahr

Straw Poll

What is the best way to code multiple metrics?

Enumerative: 1 Composite: 10 Abstain: 6

Straw Poll

Do we need multiple metrics?

Single metric: 0 Multiple: 7 Abstain: 9

Conclusion - multiple metric IDs are useful, encoded into one field.

Presentation, first part of “RFI Update” from 11-1487r0 Gunnael Strutt

Presentation, more of “RFI Update” from 11-1487r0 Jan Kruids

Straw Poll: “Partition the mesh such that there is one portal per “portal domain”:

For: 17 Against: 1 Abstain: 2

Presentation, yet more of “RFI Update” from 11-06/1487r0 Keyongsoo Kim (Joseph)

Moved, to modify the 802.11s standard D0.03 to include the changes from submission 11-06/1452r0

Moved: Jarko Knecht Second: Jokela

For: 8 Against: 1 Abstain: 10 (passes > ¾)

The Chair recessed the session.

## **Session V, Wednesday September 20<sup>th</sup>, 13:30-15:30, Room Bellarine 4**

Dee Denteener continued as Temporary Secretary for this and following sessions.

The Chair reviewed the Agenda using document 11-06/1140r9 and provided a summary of previous sessions, announced two additional sessions, September 20, AM2, and September 21, AM1, and reminded all to use the attendance system.

Moved, to instruct the editor to incorporate document 11-06/1470r2 into the TGs draft.

Moved: Steve Conner Second: Vann Hasty

For: 16 Against: 12 Abstain: 7 (fails < ¾)

Moved, to incorporate document 11-06/1350r0 into the draft and adopt it as the resolution of CID 161.

Moved: Azman-Osman Lim Second: Juan Carlos Zuniga

For: 14 Against: 1 Abstain: 16 (passes > ¾)

Motions on 11-06/1476r0 were withdrawn and moved to Thursday AM1 session to incorporate MAC discussions that took place today.

Moved, to incorporate document 11-06/1420r2 into the draft and accept it as the resolution of CIDs 125 and 126.

Moved: Guido Hiertz Second: Patrick Mo

The Motion was deferred to Thursday AM1 but subsequently withdrawn.

Moved, to incorporate document 11-06/1308r2 into the draft.

The motion was changed to a straw poll. There were no objections to this.

Straw Poll: "Should the criterion for sending a congestion control request or a neighbourhood congestion announcement should be defined in 802.11s?"

For: 11 Against: 11 Abstain: 5

Moved, to incorporate document 11-06/1395r2 and 11-06/1481r0 into the draft

Moved: Joseph Kim Second: Azman-Osman Lim

There was no discussion.

For: 19 Against: 0 Abstain: 5 (passes > ¾)

Presentation "6-Address Scheme for TGs Mesh" 11-06/0841r5 Josph Kim

Motion to adopt deferred

Presentation "Proposed Resolution text for CCF related CIDs" 11-06/1505r1 Rakesh Taori

The Chair recessed the session.

## **Session VI, Wednesday September 20<sup>th</sup>, 16:00-18:00, Room Corryong 1**

The Chair reviewed the Agenda using document 11-06/1140r9, provided a summary of previous sessions and reminded all to use the attendance system

Moved, to accept the resolution to CID 129 in document 11-06/1505r1

Moved: Rakesh Taori Second: Guido Hiertz

Approved by unanimous consent

A motion to accept the resolution to CID 125 in document 11-06/1505r1 was deferred until the Thursday AM1 session

Moved, to accept the resolution to CID 124 in document 11-06/1505r1

Moved: Rakesh Taori Second: Dee Denteener

Result: Approved unanimously

Moved, to direct the editor to incorporate the changes in document 11-06/1464r2 into the TGs draft

Moved Joseph Kim Second: Guenael Strut

For: 14 Against: 0 Abstain: 7 (passes > ¾)

The Chair recessed the session.

## **Session VII, Thursday September 21<sup>st</sup>, 08:00-10:00, Room Bellarine 4**

The Chair reviewed the Agenda using document 11-06/1140r10, provided a summary of previous sessions and reminded all to use the attendance system

Presentation "Congestion Control Announcement" 11-06/1416r1 Junping Zhang

Straw Poll

Do you think that the mechanism of this proposal can solve comment CID 12 and 231 ?

For: 5 Against: 7 Abstain: 10

Presentation "Proposed Resolution texts for CID 158, 219, 222, 223, 227" 11-06/1476r1 Kaz Sakoda

Moved, to incorporate document 11-06/0901r2 into the draft

Moved: Kaz Sakoda Second: Juan-Carlos Zuniga

Without objection, this motion and the others in 11-06/1476r0 were postponed.

Presentation “Proposed resolution text for CCF related CIDs” 11-06/1505r2 Rakesh Taori

The Chair indicated that he wished to cancel the AM2 session and recess until the PM1 session. There was so objection so TGs was so recessed.

### **Session VIII, Thursday September 21<sup>st</sup>, 13:30-15:30, Room Corryong 1**

The Chair reviewed the Agenda using document 11-06/1140r10, provided a summary of previous sessions and reminded all to use the attendance system

Moved, to accept resolution to CID 125 in document 11-06/1505r2

Moved: Rakesh Taori ; Seconded: Guido Hiertz

For: 16 Against: 0 Abstain: 2 (passes > ¾)

Presentation “Virtual carrier sense absence in CCF” 11-06/15444r0 Mathilde Benveniste

Moved, to accept resolution to CID 69, 70, 71, and 208 in 11-06/1505r1

Moved: Rakesh Taori Second: Guido Hiertz

For: 13 Against: 1 Abstain: 9 (passes > ¾)

Moved, to accept the resolution to CID 223 as proposed in document 11-06/0901r2

Moved: Kaz Sakoda Second: Juan-Carlos Zuniga

For: 17 Against: 4 Abstain: 3 (passes > ¾)

Moved, to accept the resolution to CID 222 as proposed in document 11-06/0900r3

Moved: Kaz Sakoda Second: Juan Carlos Zuniga

For: 16 Against: 3 Abstain: 2 (passes > ¾)

Moved, to accept the resolution of CID 227 as proposed in document 11-06/0902r2

Moved: Kaz Sakoda Second: Paul Feinberg

For: 6 Against: 5 Abstain: 9 (failed < ¾)

Moved, to direct the Editor to incorporate all draft changes and comment resolutions adopted during at this September meeting into the current Draft and resolution spread sheet, and produce a draft D.04 and spread sheet revision.

Unanimously accepted

The Chair led discussion on TGs process, using document 11-06/1386r2

Best date for an ad hoc is 2-3 Nov

Possible locations Straw Polls:

First poll : Munich 5, Eindhoven 2, Boston 4, Schaumburg II 3

Second poll: Munich 8 Boston 2 Schaumburg 5

Munich wins with a majority.

Who is likely to come: 7

Moved to ask the WG to approve a two day ad hoc

Moved: Michael Bahr

For: 9 Against: 0 Abstain: 6

The Chair suggested Teleconferences at 5pm, on Wednesdays Oct 4, Oct, 18, Nov 8

Approved unanimously

Moved, that co-ordinators of informal groups listed on the next slide (see below) send a message to the TGs mailing list announcing their meetings and teleconferences.

Moved: Mathilde Benveniste Second: Dee Denteneer

For: 8 Against: 0 Abstain: 8

The informal groups listed on the slide referenced above are as follows:

- MAC Informal Group: Juan Carlos Zuniga [j.c.zuniga@ieee.org](mailto:j.c.zuniga@ieee.org)
- RFI (Routing Forwarding and Internetworking) Informal Group: Avinash Joshi  
[Avinash.Joshi@motorola.com](mailto:Avinash.Joshi@motorola.com)
- General Informal Group: Steve Conner [w.steven.conner@intel.com](mailto:w.steven.conner@intel.com)
- Security Informal Group: Jesse Walker [jesse.walker@intel.com](mailto:jesse.walker@intel.com) (alternative Suman Sharma  
[suman.sharma@intel.com](mailto:suman.sharma@intel.com))
- CCC Informal Group: Mathilde Benveniste [benveniste@ieee.org](mailto:benveniste@ieee.org)

The Chair adjourned the session *sine die*.

## Detailed Record

### **Session I, Monday September 18<sup>th</sup>, 13:30-15:30, Room Bellarine 3**

The Chair called the session to order at 13:30.

The Agenda for this meeting is in document 11-06/1140r5

The Chair reminded everyone to use the attendance system.

The Chair asked for volunteers to serve as Temporary Secretary. Frank Ciotti was the only volunteer and was appointed for this session.

The Chair reviewed the IEEE 802 and 802.11 Policies and Procedures on Intellectual Property and Inappropriate Topics. 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 reviewed the IEEE Anti-trust Statements.

The Minutes of the July 2006 meeting, document 11-06/1007r0, were approved by unanimous consent.

The Minutes of the Teleconferences;

August 2, 2006 11-06/1146r0

September 6, 2006 11-06/1377r0

Were approved by unanimous consent.

The Chair reviewed the Agenda for the session using document 11-06/1140r5. There was general agreement with the following comments;

- Michael Bahr requested time for a presentation (11-06/1425r0)
- Time requested for a presentation on the six address scheme
- Time requested for a presentation on Radio Aware-OLSR updated text
- Presentations 06/1452 & 06/757r1

The Tuesday evening session was designed as an RFI Session

The Chair reviewed the TG process using document 11-06/1386r1

Key point was that TGw may not need all of its time this week, so TGs may be able to use some of TGw's time if needed to try to go to Letter Ballot this week. All changes need to be completed by Wednesday morning in order to prepare a draft for LB and have the task group approve that after 4 hours on the server. An alternative is to pre-approve a draft, which will allow changes up until Thursday morning.

Presentation "Ambiguous terms in IEEE 802.11s/D0.03" 11-06/1371r0 Guido Hiertz

Discussion;

- Referring to slide 54, TGs defines a 6 address scheme. How can this format be communicated between AP and MP? If unable to do this, we will be unable to achieve interoperability. The TG needs to choose a 4 or 6 address scheme.
- I like the idea of reducing the number of entities we are defining. Is your intent to remove all new terms other than MP?  
Yes. I suggest that it becomes a matter of configuration to define the functionality of a device.

- The functionalities still need to be defined, but the new terms defining these should be removed.
- There is precedence for both approaches in the 802.11 standard. Does anyone remember why these terms (e.g. MAP) were defined?  
The PAR included the term Mesh AP.
- Chair: The editors group has asked that the TG's not define these types of orthogonal terms. If you define Q-station (has 802.11e) and HT Station (has 802.11n) and Mesh AP (an AP with 802.11s), ..., then do you call something with all of these a Q-HT-Mesh-AP or what?
- Are you suggesting a cut and paste replacement of MAP with a new term?  
It may take a few iterations, but in the end I would like to see the document only refers to a Mesh Point.
- A MAP has more functionality than both an AP and a MP.
- Both an AP and MP are built on a STA.
- Then why use the term AP? Why not STA with some additional functionality? I think it may be better to have a simple term to define it.
- There seems to be agreement that there are too many terms and entities.
- Should all MP's be able to communicate with each other?  
Yes, of course.

Straw Poll:

Shall we change the Draft so there is only one entity term "MP"?

For: 10 Against: 3 Abstain: 9

Presentation "Co-existence problem of 802.11s Congestion Control" 11-06/1376r1 Guido Hiertz  
Discussion;

- We haven't seen any simulation results in the past comprised of a mixed environment of legacy and Congestion Control entities.
- This presentation seems to be inconsistent with your previous presentation of defining only a MP.  
This is a function I would like to see in the MP, not outside it.
- You will not be able to control the legacy stations.  
The legacy STAs will have better access to the medium over those using congestion control. In fact, turning on congestion control in a mixed environment may actually reduce the throughput of those congestion control conformant STA's.
- Also, TCP has its own congestion control mechanism.  
I don't want to fix congestion control, I just want to say that it needs something additional.

The Chair recessed the session.

## **Session II, Tuesday September 19<sup>th</sup>, 10:30-12:30, Room Corryong 1**

The Chair convened the session at 10:30

The Chair reminded all to use the attendance system

Frank Ciotti again volunteered and was again appointed Temporary Secretary.

The Chair announced that additional TGs sessions may be announced at the mid-session 802.11 plenary

Presentation: "Mesh Deterministic Access (MDA) Optional IEEE 802.11s MAC scheme Simulation results" 06/1370r0 Guido Hiertz  
Discussion;

- Was performance measurement in delay or throughput?  
Throughput. MDA performs better in a high traffic scenario. Long TXOPs interfere with MDA operation.
- It is well established that TXOPs improve the performance of CSMA. This only applies in conjunction with MDA.
- Is there scheduling for MDA transmissions?  
There are reservations established for each transmission from the MP's neighbors.
- Does this scheme scale for many neighbors?  
In large scale networks, it may be difficult to find a time slot to make reservation. But the same would happen in other schemes.
- If the time it takes to setup a reservation is too long, then the frame may become stale by the time it is transmitted.  
Fairness to access the medium has been changed with 11e to base priority on duration rather than on simply a packet.
- What is the impact of MDA on existing (legacy) networks?  
If the legacy networks have a small degradation but the new networks have a large improvement in performance, then the overall gain is positive.
- Is the goal to silence EDCA stations?  
That is up to the TG.  
If an AP decides to silence its own STA, that is acceptable. But trying to silence all EDCA STA's, including independent STAs that are parts of other networks, will not gain acceptance from the Working Group.

Presentation "Overview of Broadcast Power Save Optimizations for 802.11s Mesh Networks" 11-06/1351 Tony Braskich

Discussion;

- This proposal is only for devices in power-save. Should we be looking at the issue of broadcast in multi-hop as a separate topic?  
We should try to keep the discussion to the presentation.
- This is a good mechanism for saving power for broadcast/multicast transmissions.
- Any objection to adding an agenda item for a vote on 06/1350 for the Wednesday 1:30 session?  
None, so the agenda was so amended.
- 11-06/1350 is the normative text for 11-06/1351.

Presentation "Connectivity Reporting Mechanism" 11-06/757r1 Jarkko Knecht  
Normative text is in document 11-06/1452r0

Discussion:

- What section does this apply to in the draft?  
This is for the Beacon Broadcaster operator role. This is optional.
- Is the purpose to collect information in case someone needs it?  
Yes, the Beacon Broadcaster will likely not be able to hear any other Beacons. This information can be used to reduce collisions.
- If there are two Beacon Broadcasters, will this affect this functionality?  
The Beacon Broadcaster roles will rotate among nodes in the network.  
The goal is to not have any Beacons on the second hop neighbor.
- With the Beacon containing the neighbor list, this can result in Beacons becoming quite large.  
This proposal does not change most Beacons. The neighbor list is only present in Mesh DTIM Beacons

The Chair indicated that a Motion on this proposal will be made during the evening session. There was no objection.



Presentation “Proposed resolution texts for CID 158,219,222,223,227” 11-06/1476r0 Kazuyuki Sakoda  
CID 222: 11-06/900r1  
CID 223: 11-06/901r1  
CID 227: 11-06/902r1  
CID 219: 11-06/1475r0  
CID 158: 11-06/1474r0

Discussion;

- You want to perform a form of APSD, but you are not going to describe its operation?  
This is described in 11-06/1474
- It would be better to have a simpler Power Point presentation with your proposals. It is difficult to assess the changes listed in the normative text.
- The term unsynchronized is a confusing term, as there is still some timing information retained about the neighbors to know when to wake-up to listen for beacons.
- A new STA to a mesh that wishes to enter PS must adopt the Beacon Interval or ATIM interval.

The Chair asked if there were any objection to placing motions for these resolutions on the agenda for the Wednesday 1:30pm session. There were none.

The Char recessed the session.

### **Session III, Tuesday September 19<sup>th</sup>, 16:00-18:00, Room Corryong 1**

[This session was primarily designated for Security topics.]

The Chair reviewed the progress to date, the presentations for this session and reminded everyone to use the attendance system

Presentation “11i PSK use in 11s: Consider Dangerous” 11-06/1446r1 Dan Harkins

Discussion;

- Isn't this mitigated by using better pass-phrases?  
Yes.
- The Four-way-handshake traffic for that session must be captured in order to decrypt the traffic of a previous session.
- There are scenarios in meshes where the PSK is not shared, so this attack wouldn't apply to the rogue extension of the mesh.
- It would be better to just come up with a better PSK authentication scheme.
- There would be a benefit for keeping PSK as an option.
- Why, if you had something better, why use the “hackable” option?
- What is the suggested solution? Slide 8?  
Yes.
- WFA Simple Config is something that we may want to use.  
Simple Config has the same problem. It will just take a little longer to crack.  
If the first Simple Config exchanged is not captured, then it will be very difficult to crack.
- Is the replacement scheme as easy to use as PSK or Simple Config?
- Yes.

Straw Poll

PSK authentication as defined by 802.11i is inappropriate for use in 11s and it should be replaced.

For: 4 Against: 3 Don't Know: 17 Don't Care: 1

Presentation “Efficient Mesh Security and Link Establishment” 11-06/1471r2 Steven Conner, Tony Braskich (corresponding text is in 11-06/1470)

Discussion;

- Is the same key used to MIC the message and encrypt the Key?  
No, PTK-MD is split into KCK & KEK.
- What if message 3 is dropped?  
Message 2 could be repeated.
- It seems like an ACK (message 4) is needed.
- Don't you want the link establishment to be secure?  
Yes, but there is a chicken and egg problem. We are considering a future optimization which establishes the link and security in the same step.
- Document 11-06/0883 defines such an algorithm
- How is the MKD authorized to be an MKD?  
This is configured outside the scope of 11s. There is mutual authentication between the MKD and the online AS.
- What if there are multiple hops between the MKD and the MA (Mesh Authenticator).  
The MA doesn't care. It just knows it sends a request and gets a response.
- On slide 35, why are the values random?  
They are really nonces.
- Is this protocol Layer 2 or Layer 3?  
All done in 11s – so Layer 2.
- So how is the key delivered over multiple hops?  
The key is encrypted end-to-end, and each hop is also secure (encrypted) in a secure mesh.
- How does the MN obtain the address of the MKD?  
It is passed from the MA

[End of Security topics, beginning of Other presentations.]

Presentation “CCF works with PSM and MDA” 11-06/1421r1 Na Shan

Discussion;

- What is the difference between the existing Duration and the new Duration field?  
The Duration field in the RTX frame defines the duration for the RTX/CTX.
- So you are introducing a NAV for the data channel?  
Yes
- If the new NAV is used then all the CCF capable stations must support this?  
Yes

The Chair indicated that a Motion to accept this submission will be added to the Agenda for tomorrow. There was no objection.

Presentation “Submission for CID 66” 11-06/1415r0 Zhang Junping

The Chair indicated that a Motion to accept this submission will be added to the Agenda for tomorrow. There was no objection.

The Chair recessed the session.

## **Session IV, Tuesday September 19<sup>th</sup>, 19:30-21:30, Room Corryong 1**

[This session was primarily designated for RFI (Routing, Forwarding, and Interworking) topics.]

The Chair reminded people to record their attendance.

The Chair called for volunteers to be Temporary Secretary. Only Dee Denteener volunteered and he was so appointed by the Chair.

Presentation “Proposed Text for Resolution of CIDs 30, 31, 34, and 179” 11-06/1425r0 Michael Bahr  
Discussion;

- There was a question on consistency between metrics if multiple metrics are used.  
This is necessary to avoid looping. If you have two nodes that are forwarding based on different metrics, then it easy to create loops. They should interpret the data the same.
- Are there typical application scenarios for this?  
This change makes it only possible that multiple metrics are advertised, not that they can be used.
- In practice people do not use this (despite some theory)  
Then there is little reason for this.
- The PAR requires multiple metrics.  
No, only different metrics for different protocols  
The PAR only requires alternative metrics.
- Until we see the need, do not use.  
It is difficult to change later. And there really exist routing protocols that use this.
- What is the difference with changing between profiles?
- Do you need multiple routing tables for multiple metrics?  
No, but this was debated.
- You can always combine metrics into one compound metric, isn't that easier?  
There is a scalability issue. There are enough bits in the field.
- Is there a discrepancy in the draft of how HWMP is used and the current proposal?  
No

Straw Poll

What is the best way to code multiple metrics?

Enumerative: 1 Composite: 10 Abstain: 6

Straw Poll

Do we need multiple metrics?

Single metric: 0 Multiple: 7 Abstain: 9

Conclusion - multiple metric IDs are useful, encoded into one field.

Presentation, first part of “RFI Update” from 11-1487r0 Gunnael Strutt

Discussion;

- Is the text on HWMP now grouped into three sections?  
No: each of the IEs are in one clause, But they are interdependent.
- The text is 80% ready, what are the plans? Difficult to have it ready tomorrow morning, in time to vote on.  
We may have more time. It would be useful to have an extra late afternoon slot. However, also the technical editor needs time, if the motion on this is accepted.  
Extra slots can be announced in the midweek plenary.

Presentation, more of “RFI Update” from 11-1487r0 Jan Kruijs

Discussion;

- Is there impact on topology awareness (connectivity lists) as presented this afternoon?  
I don't see a connection: that was for LWMP without routing capabilities.

- Why do we do this?  
To avoid loops, bridges forward broadcasts.
- How do we broadcast among these domains  
That is still possible

Straw Poll: “Partition the mesh such that there is one portal per “portal domain”:

- Requires domain identification in broadcast e.g. Portal (MAC) Address
- Provides means for improving broadcast efficiency, albeit with appropriate configuration”

For: 17 Against: 1 Abstain: 2

Presentation, yet more of “RFI Update” from 11-06/1487r0 Keyongsoo Kim (Joseph)  
Discussion;

- Is the frame format changed compared to previous presentation?  
Only cosmetically.

Moved, to modify the 802.11s standard D0.03 to include the changes from submission 11-06/1452r0

Moved: Jarko Knecht Second: Jokela

For: 8 Against: 1 Abstain: 10 (passes > ¾)

Announced that informal discussion regarding the MAC could occur tomorrow morning 9.00am-10.00am around the registration desk

The Chair recessed the session.

## **Session V, Wednesday September 20<sup>th</sup>, 13:30-15:30, Room Bellarine 4**

Dee Denteener continued as Temporary Secretary for this and following sessions.

The Chair reviewed the Agenda using document 11-06/1140r9 and provided a summary of previous sessions, announced two additional sessions, September 20, AM2, and September 21, AM1, and reminded all to use the attendance system.

Moved, to instruct the editor to incorporate document 11-06/1470r2 into the TGs draft.

Discussion ensued...

- In section 8.8.2.9.1 does MA have NASpoint?  
No it exists in MKD.
- How is the process bootstrapped?  
Prior configuration, eg. configured at the same device
- Missing functionality for reassembly of EAP frames, which can be quite large.  
Implementation choice or higher layer protocol. This is just the basic framework, and we are open to additional thoughts.
- Why isn't RADIUS used?  
It's a layer three protocol; we don't want it implemented in every MP (Mesh Point)
- What if mesh bifurcates?  
If connectivity is not available then everything fails, but the keys have limited validity.
- Encrypted contents length field in table is not sufficient  
8.8.3.2.2 gives normative text
- There must be authorisation step, to make mesh point an authenticator. Mere possession is not enough.  
Currently, no way to verify: the draft is incomplete  
Authorisation is implicit; the functionality could be added but it is not clear whether this is required by the group.

- MKD asserts that he is MKD, needs validation by trusted third party  
The credentials are obtained by its talking to an AS, this must be enough
- What is the history of the proposal?  
It is based on Jesse Walker's work in San Diego, which just failed confirmation, and presented later in 11s teleconference. It was merged with another proposal to have also 11r key caching.
- Is there a joint recommendation by the security group?  
No

Moved: Steve Conner Second: Vann Hasty

For: 16 Against: 12 Abstain: 7 (fails < ¾)

Moved, to incorporate document 11-06/1350r0 into the draft and adopt it as the resolution of CID 161.  
There was no discussion

Moved: Azman-Osman Lim Second: Juan Carlos Zuniga

For: 14 Against: 1 Abstain: 16 (passes > ¾)

Motions on 11-06/1476r0 were withdrawn and moved to Thursday AM1 session to incorporate MAC discussions that took place today.

Moved, to incorporate document 11-06/1420r2 into the draft and accept it as the resolution of CIDs 125 and 126.

Discussion ensued...

- What if Destination Channel is busy; how is duration updated, you only have a lower bound?  
Not
- How is the information used?  
This is not described,
- The solution may not be implementable  
There is no normative text to this end
- Examples of use were described: avoidance of collision with MDA, to assess the time that the stations will be away

Moved: Guido Hiertz Second: Patrick Mo

The Motion was deferred to Thursday AM1 but subsequently withdrawn.

Moved, to incorporate document 11-06/1308r2 into the draft.

The motion was changed to a straw poll. There were no objections to this.

Straw Poll: "Should the criterion for sending a congestion control request or a neighbourhood congestion announcement should be defined in 802.11s?"

For: 11 Against: 11 Abstain: 5

Moved, to incorporate document 11-06/1395r2 and 11-06/1481r0 into the draft

Moved: Joseph Kim Second: Azman-Osman Lim

There was no discussion.

For: 19 Against: 0 Abstain: 5 (passes > ¾)

Presentation "6-Address Scheme for TGs Mesh" 11-06/0841r5 Josph Kim

Discussion

- Has the document been on the server for 4 hours?

Motion to adopt deferred

Presentation "Proposed Resolution tewxt for CCF related CIDs" 11-06/1505r1 Rakesh Taori

- As to CID 129, an alternative is to retransmit in the next period  
Optimisations are possible

- As to CID 124, how can you guarantee that the broadcast is the first in the next period?  
Currently, not possible to prioritise broadcast. Options for this can be investigated.
- As to CID 125, the resolution is insufficient there should be a reason code  
Does not solve all problems
- As to CID 69, 70, 71, and 208
- CCA even with lowered threshold is not a replacement for virtual carrier sensing; it is imperative to have VCS  
It is not a full replacement
- Currently, there are very many devices that do not use VCS, e.g. for the many small packets and for devices that have a high threshold at which to switch from CSMA to CSMA/CA.

The Chair recessed the session.

## **Session VI, Wednesday September 20<sup>th</sup>, 16:00-18:00, Room Corryong 1**

The Chair reviewed the Agenda using document 11-06/1140r9, provided a summary of previous sessions and reminded all to use the attendance system

Moved, to accept the resolution to CID 129 in document 11-06/1505r1

Moved: Rakesh Taori Second: Guido Hiertz

Approved by unanimous consent

A motion to accept the resolution to CID 125 in document 11-06/1505r1 was deferred until the Thursday AM1 session

Moved, to accept the resolution to CID 124 in document 11-06/1505r1

Moved: Rakesh Taori Second: Dee Denteener

Discussion ensued...

- Isn't the time for broadcast too limited?  
Depends on CCW setting

Result: Approved unanimously

Moved, to direct the editor to incorporate the changes in document 11-06/1464r2 into the TGs draft

Moved Joseph Kim Second: Guenael Strut

Discussion ensued...

- The header is now 60 octets  
1 octet is added in which 1 flag is used. The 12 octets of the extra fields are optional.
- The encapsulation proposal was rejected because of the overhead, but this also causes overhead.  
The overhead is 1 octet or 13. Maybe the proposals in TGn on the header are relevant.

For: 14 Against: 0 Abstain: 7 (passes > 3/4)

The Chair recessed the session.

## **Session VII, Thursday September 21<sup>st</sup>, 08:00-10:00, Room Bellarine 4**

The Chair reviewed the Agenda using document 11-06/1140r10, provided a summary of previous sessions and reminded all to use the attendance system

Presentation "Congestion Control Announcement" 11-06/1416r1 Junping Zhang

Discussion;

- Does this assume that MPs are synchronised?  
No

- Congestion will be experienced by many nodes, how do you assure consistency of the information?
- Is this related to your presentation given yesterday?  
No

## Straw Poll

Do you think that the mechanism of this proposal can solve comment CID 12 and 231 ?  
For: 5 Against: 7 Abstain: 10

Presentation “Proposed Resolution texts for CID 158, 219, 222, 223, 227” 11-06/1476r1 Kaz Sakoda

Moved, to incorporate document 11-06/0901r2 into the draft

Moved: Kaz Sakoda Second: Juan-Carlos Zuniga

Discussion ensued...

- When was the document uploaded?
- Yesterday evening; we need to postpone until PM1 sessions, as well as related motions

Without objection, this motion and the others in 11-06/1476r0 were postponed.

Presentation “Proposed resolution text for CCF related CIDs” 11-06/1505r2 Rakesh Taori

The Chair indicated that he wished to cancel the AM2 session and recess until the PM1 session. There was so objection so TGs was so recessed.

## Session VIII, Thursday September 21<sup>st</sup>, 13:30-15:30, Room Corryong 1

The Chair reviewed the Agenda using document 11-06/1140r10, provided a summary of previous sessions and reminded all to use the attendance system

Moved, to accept resolution to CID 125 in document 11-06/1505r2

There was no discussion.

Moved: Rakesh Taori ; Seconded: Guido Hiertz

For: 16 Against: 0 Abstain: 2 (passes > ¾)

Presentation “Virtual carrier sense absence in CCF” 11-06/15444r0 Mathilde Benveniste

Discussion;

- Is there is room for lowering the CCA thresholds?  
This will lower the probability of finding an available channel as available
- CCF answers to the needs of CE industry

Moved, to accept resolution to CID 69, 70, 71, and 208 in 11-06/1505r1

There was no discussion

Moved: Rakesh Taori Second: Guido Hiertz

For: 13 Against: 1 Abstain: 9 (passes > ¾)

Moved, to accept the resolution to CID 223 as proposed in document 11-06/0901r2

Discussion ensued...

- There is an efficiency issue, it makes more sense for MPs to synchronize before going to PS  
This gives more flexibility for the mesh points. The difference between synchronising and unsynchronising MPs still needs some work.
- The text is written by various authors and not always consistent, and needs more work  
I agree

- Why do we need unsynchronising MPs in PS?  
In some use cases you do not want to set the global parameters
  - This removes text by various authors not present
- Moved: Kaz Sakoda Second: Juan-Carlos Zuniga  
For: 17 Against: 4 Abstain: 3 (passes > ¾)

Moved, to accept the resolution to CID 222 as proposed in document 11-06/0900r3

Discussion ensued...

- Are there changes in the beaconing section?  
I'll be happy to move sections
- There appears to be an inconsistency with previous sections on beaconing
- The text does not provide anything new, what value can be obtained  
It may be better to give it as informative text; what I want to show is that PS (Power Save) works well with routing.
- Maybe it is better to combine some resolutions into one text and then have some discussion rather than put premature text in the draft.  
To put it in the draft gives rise to more discussion and comments

Moved: Kaz Sakoda Second: Juan Carlos Zuniga  
For: 16 Against: 3 Abstain: 2 (passes > ¾)

Moved, to accept the resolution of CID 227 as proposed in document 11-06/0902r2

Discussion ensued...

- Speak against, this leaves all the issues with multicast and broadcast open and defines new modes for this, but does not describe how this is controlled. There is a lack of details  
The original text gives very straight rules, but this gives problems, so I tried to relax the rules
- Speak against, the text gives problems  
Nobody cared for the material, the text has been there since June, no reactions, until I put it as a motion

Moved: Kaz Sakoda Second: Paul Feinberg  
For: 6 Against: 5 Abstain: 9 (failed < ¾)

Moved, to direct the Editor to incorporate all draft changes and comment resolutions adopted during at this September meeting into the current Draft and resolution spread sheet, and produce a draft D.04 and spread sheet revision.

Unanimously accepted

The Chair led discussion on TGs process, using document 11-06/1386r2

Best date for an ad hoc is 2-3 Nov

Possible locations Straw Polls:

First poll : Munich 5, Eindhoven 2, Boston 4, Schaumburg II 3

Second poll: Munich 8 Boston 2 Schaumburg 5

Munich wins with a majority.

Who is likely to come: 7

Moved to ask the WG to approve a two day ad hoc

Moved: Michael Bahr

For: 9 Against: 0 Abstain: 6

The Chair suggested Teleconferences at 5pm, on Wednesdays Oct 4, Oct, 18, Nov 8

Approved unanimously

Discussion;



- Can we set up a process such that informal subgroup ad hocs are notified to the TGs group?  
We must check whether this is allowed and how such groups can be defined.
- There are mailing lists for RFI and security
- Are these groups officially recognised?  
The procedure is: The volunteers that coordinate the informal groups send out an e-mail for meetings; you should send them an e-mail to get on the list.
- The MAC group has not been following this as they do not have a mailing list, so mails should be sent to the TGs list.
- It is not sufficient to announce at TGs official sessions.

Moved, that co-ordinators of informal groups listed on the next slide (see below) send a message to the TGs mailing list announcing their meetings and teleconferences.

Moved: Mathilde Benveniste Second: Dee Denteneer

For: 8 Against: 0 Abstain: 8

The informal groups listed on the slide referenced above are as follows:

- MAC Informal Group: Juan Carlos Zuniga [j.c.zuniga@ieee.org](mailto:j.c.zuniga@ieee.org)
- RFI (Routing Forwarding and Internetworking) Informal Group: Avinash Joshi  
[Avinash.Joshi@motorola.com](mailto:Avinash.Joshi@motorola.com)
- General Informal Group: Steve Conner [w.steven.conner@intel.com](mailto:w.steven.conner@intel.com)
- Security Informal Group: Jesse Walker [jesse.walker@intel.com](mailto:jesse.walker@intel.com) (alternative Suman Sharma  
[suman.sharma@intel.com](mailto:suman.sharma@intel.com))
- CCC Informal Group: Mathilde Benveniste [benveniste@ieee.org](mailto:benveniste@ieee.org)

The Chair adjourned the session *sine die*.

## Mesh Restaurant Photograph

Appropriately for a meetings site of 802.11 TGs, the main restaurant at one of the participating hotels, the Crown Promenade Hotel, was called the Mesh Restaurant, as shown in the somewhat blurred cell phone camera picture below:



**IEEE P802.11  
Wireless LANs**

**Meeting Minutes September 2006 Interim**

Date: 2006-07-20

**Author(s):**

Name	Company	Address	Phone	email
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**Abstract**

This document contains the meeting minutes from the September 2006 interim held in Melbourne, NSW, Australia.

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## **Tuesday Session PM1 (2006-09-19, 1.30 – 3.30 PM)**

### **1.1. Meeting called to order at 1.30**

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

Charles reviewed the patent policy. The patent policy was accepted as read, with no comments from the TG. Chair then asked if there were any letters of assurance that the WG chair needed to be aware of; there were none.

### **1.3. Recording Secretary**

Tom A was appointed recording secretary for the session.

### **1.4. Agenda**

Chair reviewed the proposed agenda (document 11-06-1428/r1). The agenda was approved without objection.

### **1.5. Approval of Previous Minutes**

The minutes from the San Diego meeting (11-06/1034r2) were approved without objection.

### **1.6. Call for Presentations**

Chair then made a call for presentations. The following presentation slots were requested:

- comment resolution for the COAT environment by Dalton Victor
- need for TRP and TIS in 802.11.2 by Michael Foegelle
- multipath testing in a conducted environment by Charles Wright

Discussion took place on the order of presentations. The agenda was modified. The modified agenda was approved without objection.

### **1.7. Editor's Report**

Tom A. presented his editor's report (11-04/1417r0). Chair asked for a clarification on the editor's notes stating that figures would be redrawn before WG ballot. Tom clarified that the redrawing was purely editorial and for supporting IEEE-SA requirements about the file format in which figures should be submitted (for typesetting purposes) and had nothing to do with any changes to technical content of the figures.

### **1.8. Acceptance of Comment Resolutions**

Chair then discussed the deferred comments. He asked if the 16 comments that were resolved and that could result in a modified draft had text associated with them, so that they could be put into the draft. Tom then requested that the group continue the process as in the July meeting.

Chair then placed a motion before the group to accept the resolutions to comments as discussed in teleconferences, as contained in document 11-06/872r9.

### 1.9. Motion #1

Move to accept resolutions from comment IDs 32, 289, 235, 237, 41, 44, 47, 48, 283, 50, 285, 262, 249.

Moved: Sasha Tolpin

Second: Neeraj Sharma

Y: 9

N: 0

A: 2

Motion passes.

### 1.10. Further Discussion

During the discussion of Motion #1, Michael wanted to know if the comments contained instructions to the editor. 243, 244 and 250 were dropped as a result of lack of text.

Neeraj was to provide text for these comments. Neeraj noted that there were a few more comments that had similar resolutions, so he would bring in draft text to resolve all of these together in November.

### 1.11. Comment Resolution

Chair then brought up the spreadsheet and continued with comment resolution. The following comments were discussed:

Comment 251. Discussion on relative significance between height and X/Y placement. Finally decided to change the tolerance to +/- 1.5 cm for height and X/Y in all tables.

Comment 252. Deferred to November pending a presentation on this topic in conjunction with Pertti.

Comment 253. Also deferred, same reason as comment 252.

Comment 254. Also deferred, same reason as comment 252.

Comment 255. Discussion. Changed the resolution in the tables to match the resolution to comment 251.

Comment 256. Declined. Draft already addresses the issue.

Comment 257. Countered after some discussion. The item in question was modified to reflect that people are not allowed to approach within 50 m of the DUT and WLCP.

Comment 248. Deferred, requesting commenter to provide clarification.

### 1.12. Recess

Charles then recessed the meeting until 7.30 PM.

## **Tuesday Session EVE (2006-09-19, 7.30 – 9.30 PM)**

### **1.13. Meeting called to order at 7.30 PM.**

### **1.14. Presentation: 11-06/1484r0**

Sasha Tolpin presented document 11-06/1484r0, which dealt with the resolution to comment 165 . He mentioned that this was a result of a discussion during a conference call.

Charles asked about the power meter. Sasha said that we really needed the power meter to calibrate the system and and monitor the receive power on the DUT. Sasha then made a motion to accept the presented document, which had now been on the server for more than 4 hours.

### **1.15. Motion #2**

Move to accept the contents of document 11-06/1484r0 into the draft and to consider comment ID 165 as resolved.

Moved: Sasha Tolpin

Second: Mark Kobayashi

Y: 5

N: 0

A: 1

Motion passes.

### **1.16. Comment Resolution**

The group then resumed comment resolution, starting with comment 143.

Comment 143. Declined. Draft text is satisfactory.

Comment 144. Declined. Same reason.

Comment 145. Countered. Comment is addressed by CID 257.

Comment 146. Countered. A new figure caption was crafted.

Comment 52. Declined. Table 1 already covers it.

Comment 53. Much discussion on the range. Eventually countered with a requirement to report the condition of the ground.

Comment 54. Accepted.

Comment 55. Declined.

Comment 57. Deferred, same resolution as comment 252.

Comment 58. Deferred, same resolution as comment 252.

Comment 59. Withdrawn.

Comment 60. Declined.

Comment 61. Declined.

Comment 62. Declined.

Comment 63. Discussed. Deferred until 8.00 Wednesday.

### **1.17. Recess**

The meeting was recessed at 9.30 PM.

## **Wednesday Session AM1 (2006-09-20, 8.00 – 10.00 AM)**

### **1.18. Meeting called to order at 7.30 PM.**

### **1.19. Review of Agenda**

Chair reviewed the agenda and proposed that the order of presentations be modified to enable a vote on comment resolution to be performed at 2.15 PM Thursday. The agenda was accepted as modified.

### **1.20. Presentation: 11-06/1388r1**

Tom A. presented 11-06/1388r1 on unavoidable packet loss in the OFDM PHY. There was discussion. Some recommendations for modifying the 802.11.2 draft were made. Tom stated that he would bring in comments.

### **1.21. Comment Resolution**

After the presentation, the group resumed comment resolution, continuing with comment 63.

Comment 63. Countered. Added text on occupied bandwidth.

Comment 239. Deferred. Awaiting contribution.

Comment 64. Accepted. Modified text.

Comment 65. Accepted. Duplicate of comment 63.

Comment 66. Deferred. Neeraj volunteered to identify the comments that applied to the other clauses.

Comment 122. Deferred. Same resolution as comment 58.

Comment 123. Peter E. proposed that all the geometric references and spatial coordinates be expressed using ISO/IEC 19136 Geographic Information - Geographic Markup Language (GML) as this is the standard method of representing geometry, topology and coordinate reference systems. This is also used in 802.11k. In the end, the comment was countered using same resolution as CID 63.

Comment 67. Declined.

Comment 68. Deferred. Same resolution as comment 66.

Comment 69. Deferred. Need a contribution.

Comment 71. Deferred.

Comment 72. Deferred. Proposed solution that Neeraj will review.

Comment 73. Deferred. Same resolution as comment 66.

## 1.22. Recess

The meeting was recessed at 10.00 AM.

## Wednesday Session PM1 (2006-09-20, 1.30 – 3.30 PM)

### 1.23. Meeting called to order at 1.30 PM.

### 1.24. Discussion

Charles remarked that comment resolution would continue after a couple of incidental items had been disposed of. The incidental items related to the previously accepted presentation by Sasha that resolved comment 165.

### 1.25. Comment Resolution

Comment resolution then continued, starting with comment 70.

Comment 70. Accepted.

Comment 261. Accepted.

Comment 116. Countered.

Comment 158. Declined.

Comment 157. Countered.

Comment 124. Countered with extreme prejudice.

Comment 125. Countered.

Comment 126. Declined.

Comment 171. Declined.

Comment 128. Declined.

Comment 129. Declined.

Comment 156. Countered.

Comment 273. Accepted.

Comment 274. Accepted.

Comment 177. Declined.

Comment 275. Accepted.

Comment 302. Accepted.

Comment 131. Declined.

Charles also noted that the ACI test metric may be broken because of a lack of definition of the channel on which the interferer is to be placed. Dalton agreed to look into this.

### 1.26. Recess

The meeting was recessed at 3.30 PM.



**Thursday Session AM1 (2006-09-21, 8.00 – 10.00 AM)****1.27. Meeting called to order at 8.03 AM.****1.28. Review of Agenda**

Charles reviewed the agenda and noted that an item of new business was the liaison letter to IETF BMWG. The agenda was also changed to update the document numbers. The agenda was approved without dissent.

**1.29. Presentation: 11-06/1490r0**

Michael Foegelle then presented document 11-06/1490r0 on the need for TRP and TIS metrics. Sasha asked why the same results could not be obtained by testing the antenna in-place on the laptop and then adding in the results of a conducted test. There was some discussion. Tom pointed out that a poorly shielded NIC card would couple to the metallic elements of the laptop and would show completely different results from a well-shielded NIC. There was more discussion.

**1.30. Motion #3**

Move to accept document 11-06/0906r0 "TRP and TIS Performance Metrics Proposed Text" into the P802.11.2 draft.

Moved: Michael Foegelle

Second: Richard Kennedy

Y: 7

N: 9

A: 2

Motion fails.

**1.31. Presentation: 11-06/1501r0**

Charles then requested Roger Durand to act as chair while he (Charles) presented document 11-06/1501r0 on multipath testing in a conducted environment, specifically on augmenting the TGT conducted environment to carry out testing in the presence of multipath signals. Roger took over and Charles presented the document. Charles noted during his presentation that the 802.11n channel models would have to be normatively incorporated into the TGT draft, as they currently existed only as TGn submissions.

There was some discussion. Roger asked whether the TGn channel model document would change, and what we would do about it. Charles felt that it would not change.

**1.32. Straw Poll #1**

Should TGT augment the conducted environment to include testing the effects of multipath in the manner described in 11-06/1501r0?

Y: 10

N: 1

### 1.33. Comment Resolution

Roger then stepped down as temporary chair, and Charles continued with the regular agenda. Comment resolution resumed, starting at comment 131.

Comment 131. Declined. Obsolete.

Comment 132. Accepted. Two places to change.

Comment 134. Declined.

Comment 135. Declined.

Comment 136. Accepted. Already implemented.

Comment 137. Accepted.

Comment 138. Accepted.

Comment 139. Accepted. Same remedy as 132.

Comment 140. Declined. No longer applies.

Comment 178. Deferred. Commenter will look at this in more detail.

Comment 155. Deferred. Sasha and Mark will work together to produce a submission.

Comment 173. Accepted.

Comment 265. Deferred. Agreed in principle but need draft text.

### 1.34. Review of Progress

Charles then reviewed the progress on comment resolution in preparation for having someone bring a motion to accept the comment resolutions at 2.15 this afternoon, after Dalton's presentation.

### 1.35. Recess

The meeting was recessed at 10.00 AM.

## **Thursday Session PM1 (2006-09-21, 1.30 – 3.30 PM)**

### 1.36. Meeting called to order at 1.30 PM.

### 1.37. Discussion

Charles requested Dalton Victor to present his contribution. Before the presentation started, Charles noted that TGT was resolving 7.4 comments per hour, versus TGn's 5.3 comments per hour. Tom snidely remarked that TGn usually resolved more substantive comments.

### 1.38. Presentation: 11-06/1526r0

Dalton presented 11-06/1526r0 on "Comment resolution for the COAT environment". The document was intended to resolve several comments against 5.2.

It was noted that the document had not been placed in the proper 802.11 WG format. Charles therefore requested Dalton to add the necessary copyright statement and headers / footers to the document and upload a revision. The 4-hour rule could then be suspended at Chair's discretion to allow the TG to vote on the revised document, as the original

document had been placed on the server for more than 4 hours and no changes were envisaged to the body of the text. The TG was directed to stand at ease while the necessary changes were made.

### 1.39. Liaison Letter

In the interim, Charles brought up the liaison letter (document 11-06/1538r0) and read it to the TG. A motion was crafted but not made, when Dalton announced that he was ready.

### 1.40. Resumption of Presentation: 11-06/1526r0

Dalton then seized the podium again, and presented the revised document. After a couple of hitches, the revised document was voted on. The Chair suspended the 4-hour rule at his discretion, hearing no objection from the TG as a whole, and a vote was taken on the document.

### 1.41. Motion #4

Move to replace the current contents of subclause 5.2 in the P802.11.2 draft with the contents of document 11-06/1526r2.

Moved: Dalton Victor

Second: Sasha Tolpin

Y: 5

N: 1

A: 2

Motion passes.

### 1.42. Acceptance of Comment Resolutions

A motion to accept the comment resolutions as a bucket was put before the TG.

### 1.43. Motion #5

Move to accept resolutions of the following comments as contained on document 11-06/872r11 and direct the editor to incorporate the resolutions into the next P802.11.2 draft:

- 251, 255, 256, 257, 143, 144, 145, 146, 52, 53, 54, 55, 59, 60, 61, 62, 63, 64, 65, 123, 67, 70, 261, 116, 157, 124, 125, 126, 171, 127, 129, 156, 274, 177, 273, 302, 130, 131, 132, 134, 135, 136, 137, 138, 139, 140, 173.

Moved: Sasha Tolpin

Second: Neeraj Sharma

Y: 4

N: 0

A: 4

Motion passes.

#### 1.44. Liaison Letter Redux

Charles then asked the group if there was any objection to dealing with the liaison letter to get it out of the way before moving on to a discussion on process. There being no objection to this from the group, the motion to approve the liaison letter was brought up.

#### 1.45. Motion #6

Move to recommend that the 802.11 WG accept document 11-06/1538r1 as the liaison response to the IETF/BMWG.

Moved: Peter Ecclesine

Second: Neeraj Sharma

Y: 7

N: 0

A: 0

Motion passes.

#### 1.46. Draft Present and Future Progress

A discussion on the draft progress and the possibility of going to WG ballot in November then took place. The question of whether to have a second internal review on the modified/added items in the draft was raised. The consensus was that there was no need to do this, and people could submit suggestions and comments at any time. It was generally agreed that due to the outstanding work (Clause 4 draft text from Fahd Pirzada, a pending proposal from Charles, plus comments that were not addressed in the database) it would be necessary to postpone the start of LB until January.

#### 1.47. Motion #4 Redux

It was then discovered that all versions of document 11-06/1526r2 were removed from the server because they were not properly formatted. Considerable consternation ensued. A motion to reconsider was recommended by Peter Ecclesine.

#### 1.48. Motion #7

Move to reconsider motion #4.

Moved: Mark Kobayashi

Second: Dalton Victor

No objection. Motion #4 was duly brought back for reconsideration.

#### 1.49. Motion #4: Reconsideration and Subsidiary Motion

Move to table motion #4.

Moved: Peter Ecclesine

Second: Mark Kobayashi.

Y: 7

N: 0

A: 0

Subsidiary motion passes. Motion #4 is tabled.

### 1.50. Teleconference Schedule

The discussion then continued on to the scheduling of teleconferences. The proposed schedule was: Thursday Oct 5, Wednesday Oct 11, Thursday Oct 19, Wednesday Oct 25, Thursday Nov 2, Wednesday Nov 8. A motion was duly made.

### 1.51. Motion #8

Move to empower TGT to hold teleconferences as follows:

Time: 12.00 noon Eastern (US) Time

Duration: 1 hour

Dates: Thursday Oct 5, Wednesday Oct 11, Thursday Oct 19, Wednesday Oct 25, Thursday Nov 2, Wednesday Nov 8.

Moved: Neeraj Sharma

Second: Richard Kennedy

Y: 7

N: 0

A: 1

Motion passes.

### 1.52. Other Business

There being no other business, a motion to adjourn was brought forward.

### 1.53. Motion #9.

Move to adjourn.

Moved: Tom Alexander

Second: Sasha Tolpin

Motion passed without objection.

### 1.54. Adjournment

The meeting adjourned at 3.15 PM.

## Action Items

1. Charles to communicate with Pertti on comment #248.

**IEEE P802.11  
Wireless LANs**

**TGu Meeting Minutes for September 2006 Interim Session  
(Melbourne, Australia)**

Date: 2006-09-17

**Author(s):**

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**Abstract**

Minutes of the 802.11 Task Group U meeting held during the IEEE 802 Interim Session in September 2006 in Melbourne, Victoria, Australia from September 17th – 22th, 2006.

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**Monday, September 18, 2006, 10:30 AM to 12:30 AM**

Chair: Harry Worstell (acting for Stephen McCann)

Recording secretary: Matthew Gast

**Call to order and agenda**

Meeting called to order on Monday, September 18 at 10:34 am Australian Eastern Standard Time (AEST) by Harry Worstell. The chair then reviewed the following topics from the agenda:

- The TG Agenda is document number 11-06/1362r2
- Attendance reminder
- Policies and procedures
  - Inappropriate topics for meetings
  - Patent policy
  - Copyright
  - Member pledge
- Approvals of the minutes of past meetings
  - July 2006 meeting minutes (document 11-06/1333r0)
    - The chair asked for corrections; none were required
    - The chair moved for approval by unanimous consent
    - There was no objection from the task group, so the minutes are approved
  - July ad-hoc meeting minutes (document 11-06/1138r0)
    - The chair asked for corrections; none were required
    - The chair moved for approval by unanimous consent
    - There was no objection from the task group, so the minutes are approved
  - Teleconference (11-06/1361r0)
    - The chair asked for corrections; none were required
    - The chair moved for approval by unanimous consent
    - There was no objection from the task group, so the minutes are approved
- Agenda approval
  - The chair discussed the agenda for the meeting from 11-06/1362r2 for the two sessions for Monday and asked if corrections were necessary
    - Slide 11: agenda item calls for approval of "this document" as 11-06/1362r0, but the document is 11-06/1362r2.
    - The number for the MIH proposal has been changed and will now be 11-06/1016r2.
    - Dave Stephenson requested to move the presentation of his paper from the Monday evening session until later in the week. The chair requested that we approve the agenda for the next two meeting sessions only.
  - After making the previously noted corrections, the chair asked if there was an objection to approving the agenda for the next two meetings. Seeing none, the agenda was adopted by unanimous consent for the two daytime meetings (10:30-12:30 and 13:30-15:30)

**Document review: 11-06/550r0 -- TGu vision document**

- The chair called for discussion on the TGu vision document
- No members called for changes

**Discussion: 11-06/1113r2, Liason letter to TIA-TR41**

The chair began discussions of the liason letters to outgoing standards bodies

- Pre-prepared motions for approval were uploaded to the server as document 11-06/1387r0

**Discussion: 11-06/1113r2, Liason letter to TIA-TR41**

- The chair called for discussion on the liason letter
- Seeing no discussion, the chair made the following motion

*Motion:* "Move IEEE 802.11u approves liason letter 11-06/1113r2, forward it to the IEEE 802.11 WG chair, requesting that it is sent to TIA TR 41.4." (This motion is slide 3 in 11-06/1387r0)

- Moved by Eleanor Hepworth, seconded by Necati Canpolat
- No discussion; no objection to calling the question
- Vote: 13 approve – 0 do not approve – 1 abstention
- Motion passes

**Discussion: 11-06/1127r2, Liason letter to 3GPP**

- The chair called for discussion on the liason letter
- Seeing no discussion, the chair made the following motion

*Motion:* "Move IEEE 802.11 approves liason letter 11-06/1127r2, forward it to the IEEE 802.11 WG chair, requesting that it is sent to 3GPP SA3." (This motion is slide 4 in 11-06/1387r0)

- Moved by Dave Stephenson, seconded by Eleanor Hepworth
- No discussion; no objection to calling the question
- Vote: 15 approve – 0 do not approve – 0 abstentions
- Motion passes

**Discussion: 11-06/1128r1, Liason letter to ETSI TISPAN**

- The chair called for discussion on the liason letter
- Seeing no discussion, the chair moved the following motion for approval

*Motion:* "Move IEEE 802.11u approves liason letter 11-06/1128r1, forward it to the IEEE 802.11 WG chair, requesting that it is sent to ETSI TISPAN" (This motion is slide 5 in 11-06/1387r0)

- Moved by Eleanor Hepworth, seconded by Dave Stephenson
- No discussion; no objection to calling the question
- Vote: 15 approve – 0 do not approve – 0 abstentions
- Motion passes

Now that the liason letters have been approved by the task group, motions need to be prepared for the full Working Group plenary. With this note, three new motions were made:

*Motion:* "Move that the IEEE 802.11 Working Group approve liason letter 11-06/1113r2 to TIA TR 41.4 and request the IEEE 802.11 Working Group Chair forward the letter to TIA TR 41.1"

- Moved by Dave Stephenson, seconded by Eleanor Hepworth
- No discussion, no objection to calling the question
- Vote: 10 approve – 0 do not approve – 1 abstention
- Motion passes

*Motion:* "Move that the IEEE 802.11 Working Group approve liason letter 11-06/1127r1 to 3GPP SA3 and request the IEEE 802.11 Working Group Chair forward the letter to 3GPP SA3."

- Moved by Eleanor Hepworth, seconded by Dave Stephenson
- No discussion; no objection to calling the question
- Vote: 11 approve – 0 do not approve – 0 abstentions
- Motion passes

*Motion:* "Move that the IEEE 802.11 Working Group approve liason letter 11-06/1128r1 to ETSI TISPAN and request the IEEE 802.11 Working Group Chair forward the letter to ETSI TISPAN."

- Moved by Dave Stephenson, seconded by Necati Canpolat



- No discussion; no objection to calling the question
- Vote: 12 approve – 0 do not approve – 0 abstentions
- Motion passes

**Discussion topic: 11-06/703r3 TGu Timeline, Stephen McCann (presented by Harry Worstell)**

- We may need to revise the timeline based on how the group is working
- This will be a discussion topic later in the week

**Presentation: 11-06/1125r0 [July 2006] TGu closing report, Stephen McCann (presented by Dave Stephenson)**

- Updates from the point of the presentation: one teleconference was cancelled, and the three proposals not approved are on the agenda for this session

**Discussion: Baseline draft document D0.01**

- There will be a long time to discuss the draft later this week.

*Motion:* Recess until 1:30 for lunch

- Moved by Dave Stephenson, seconded by Necati Canpolat
- No objection; adopted by unanimous consent
- Meeting called for recess at 11:54 am AEST

**Monday, September 18, 2006, 1:30 PM to 3:30 PM**

Meeting called to order on Monday, September 18 at 1:33 pm AEST by Harry Worstell.

The chair reminded attendees to note their attendance in the on-line system.

In reviewing the agenda, the chair asked if there would be a presentation in the authentication cluster. There was no response.

*Motion:* Move to amend the agenda to add extra at the end of this meeting time slot to, time permitting, discuss the authentication requirement.

- Moved by Eleanor Hepworth, seconded by Necati Canpolat
- No discussion; no objection to calling the question
- Vote: 22 approve – 0 do not approve – 2 abstentions
- Motion passes

**Discussion: 11-06/1014r3 Network Selection Normative Text Proposal, Necati Canpolat, et al.**

- Necati ran through the document, and then solicited comments.
- Comment (Pat Calhoun): The GAS happens before association, so the fragmentation in the unicast query method could be dangerous. As written, the AP needs to make the query to the backend service and then reassemble the response before sending it over the air to the station. There is the potential for a denial of service or other implications by forcing the reassembly on to the AP.
  - Response: Yes, this may require further refinement as we continue to work on the draft.
- Necati then made the following motion:

*Motion:* "Move that IEEE 802.11u approves document 11-06/1014r3 and requests the technical editor to add it to the IEEE 802.11u D0.02 draft document."

- Moved by Necati Canpolat, seconded by Dave Stephenson.
- No discussion, no objection to calling the question
- Vote: 24 approve – 0 do not approve – 4 abstentions
- Motion passes.

**Discussion: 11-06/1016r2, MIH Support – Normative Text Proposal, Necati Canpolat, et al.**

- Necati ran through the document, and solicited comments.
- No discussion of the document.
- Necati then made the following motion:

*Motion:* "Move that IEEE 802.11u approves document 11-06/1016r2 and requests the technical editor to add it to the IEEE 802.11u D0.02 draft document."

- Moved by Necati Canpolat, seconded by Kapil Sood
- No discussion of the motion; no objection to calling question
- Vote: 19 approve – 0 do not approve – 1 abstentions
- Motion passes.

The chair asked if there was anybody who wished to present on the authentication cluster. Seeing no speakers, the group moved to the next agenda item.

**Discussion on Authentication Requirement**

- This is an optional requirement, so we can produce a draft without it. The purpose of this discussion is to gauge interest in pursuing it farther.
- Question (Pat Calhoun): If the requirement is designed to allow multiple service providers to use the same area, you would hope that multiple service providers in an area would plan their networks carefully and not have overlapping channels.
  - Answer: This may address the case where multiple service providers shared the same infrastructure.
- Follow-up question: So, this would be like having multiple IP stacks
- This requirement was made optional due to the technical difficulty in proposal.
- Dave Stephenson: Initially, this was a mandatory requirement. But, carriers are not asking for this, so it is a lot of work for a protocol feature that may not be necessary. What are we going to do with this requirement? We will need to decide what to do with unaddressed requirements when we move to the next steps in our proposal.

*Straw poll:* "Remove the authentication requirement from the current TGu requirements document."

- 9 in favor, 0 opposed

*Motion:* "Move to instruct the editor remove requirement R11A1 from the TGu requirements specification 11-05/822r11"

- Moved by Pat Calhoun, seconded by Nancy Cam-Winget
- Debate on the motion
  - Necati: The presentation on this requirement was made previously by a member for whom English is a second language, and we should understand if he wishes to pursue the topic farther
  - Comment: if the requirement was in the document at first, why was it downgraded?
  - Comment: debate should be restricted to the motion, not its merits
- Vote: 13 in favor, 1 opposed, 8 abstaining

The chair asked if there was an objection to recess until 7:30. Seeing no objection, the meeting recessed at 3:27 pm.

**Monday, September 18, 2006, 1:30 PM to 3:30 PM**

Meeting called to order on Monday, September 18 at 7:37 pm AEST by Harry Worstell.

Agenda

- Authentication tagging (Gast) relates to the authentication requirement that was removed from the draft in the afternoon session before adjournment, and is withdrawn by the author
- Dave Stephenson's paper on multiple SSIDs was moved to Wednesday morning
- No objection to adopting the revised agenda by unanimous consent

**Presentation: 11-06/1424r0, Multicast Scope, Patrick Mo**

Discussion on the presentation

- Dave Stephenson: It is possible to achieve the scenario in slide 11 by associating the two groups to two different virtual APs
  - Answer: There may be one broadcast group that has subgroups for multicast.
- Follow up: Does one STA need two GTKs if it is subscribed to two SSPNs?
  - Answer: Yes.
- Follow up comment: If a station needs to process multiple GTKs, it is a very different problem for TGr fast roaming.
- Dave Stephenson: How many GTKs will be needed?
  - Answer: Two.

*Straw poll:* "How many like the idea of multicast scope and would like to include it in the IEEE 802.11u requirement document."

- Discussion on the poll: This could be interesting work, but we may not be ready to incorporate it into the requirements until there is further study. Patrick allowed a modification to the straw poll:

*Straw poll:* "How many like the idea of the multicast scope and would like further investigation and presentations to clarify the requirements?"

- Vote: 16 in favor, 0 opposed

The chair noted that we have reached the end of the agenda for the evening, and asked if there were objections to recessing until the joint meeting with TGu tomorrow at 1:30 pm. There were no objections, and the meeting recessed at 8:18 pm.

**Tuesday, September 19, 2006, 1:30 PM to 3:30 PM**

This is a joint meeting with the 802.21 Working Group, and was chaired by Vivek Gupta.

Meeting called to order on Monday, September 18 at 1:35 pm AEST by Vivek Gupta.

**Presentation: 11-06/1492r0, IEEE 802.11u Network Selection & MIH Support, Necati Canpolat, et al.**

- This is also available as 802.21 document number 21-06/0761.
- Question: Is traffic load the bit rate or the number of clients
  - Both of those are represented well by the 802.11e QBSS information element, and don't need to be duplicated in the 802.21 IS.
- Question: When you say 802.11 information, what do you refer to?
  - Link layer information, such as information that is already in the beacon & probe response.
- Question: When you say "local" or "remote" query, what distinguishes between the two
  - Remote and local refer not to location of IS, they refer to whether the STA is associated
- Question: When you stated "PHY types," you stated a PHY and then the spectrum in which it operates
  - PHY is much less specific to frequency than before, so it will be both
- Presenter Comment: ESSID in 11u means "common set of interworking services"
- Question: So, this means that in a deployment, every AP will have the same characteristics
  - Yes.

- Question: VoIP is very context-dependent. Is providing VoIP itself what is important, or is it whether you provide QoS suitable for VoIP.
  - Answer: Many things are required for VoIP, not just QoS. The entire network must be engineered for it (wireless, core, backhaul), and there are other network parameters.
- Question: Shouldn't the query be restricted to what 802.11 can provide?
  - No. Users want services, and the query should report whether the user's subscription is valid.
- Question: Is it implicit that the station always gives location information?
  - It is a location-based query.
- Question: Why is IS one service, but CS and ES are combined?
  - In 802.11 state 1, there is no layer 3 connection between the STA and the CS and ES.
  - However, if necessary, those two values could be separated
- Question: What is the purpose of the GAS delay?
  - It is to preserve battery life, since the AP does not know how long the query will take to complete.
  - The timer is configurable, to cope with different network architectures (example – IS locally in the 802.11 AN, versus in the core)
- Question: Is MIH function in the AP?
  - No, the AP is a lower-layer transport for state 1 frames that hold MIH frames. The AP may look at the protocol number and send it to the correct IS.
  - Only state 1 is specified in this proposal. In state 3, higher-layer protocols may handle the interaction as network traffic through the AP.
- Question: Why are there two handshakes (with delay and without)?
  - Power save is only available in state 3. There is no power save in state 1.
- Question: What is the preferred type of handoff?
  - For MIH, the default is 4-way.
- Question: Is there a DoS potential because the comeback delay can be set by a rogue?
  - 802.11 TGW is not protecting Beacons due to the difficulties. Protection is only provided after 802.11 association.
- Question: What is multicast delivery?
  - There are two delivery methods in GAS. Multicast is used when multiple STAs might be making the same query repetitively.
- Question: What are the security implications of having a multicast request?
  - There are no security implications because Action frames are in cleartext because they are in state 1 and therefore there is no way to provide protection.
  - On the AP side, whether a query response is unicast or multicast can be configured. If only one method is supported, the STA should request that one.
- Question: What should the limit of the query response be?
  - That is a good question. What are query response lengths likely to be? There is a need for an upper bound. As an AP manufacturer, I would like to limit it to one or two Ethernet MTUs
- Question: Right now, .21 has channel number as static information.
  - It is routine for radio management algorithms to change channel numbers, so the information in the .21 IS might become stale. What does the STA do?
  - Comment: There is no channel number IE. It is only the frequency range.
- Question: 802.21 doesn't follow the guiding principles in slide 13. If all the information is sent at state 1, it is available to any station. So, therefore, isn't it kind of like a Beacon-like entity that any station can use?
  - We would like to converge on .11 information stored in .21 IS.
  - Follow-up comment: Should support minimum, but it should also not be limited.
  - Presenter question to commenter: Why not allow STAs to get the information from the Beacon they process already?

- This could be a way that we publish information that has not yet been standardized in the Beacon
- If I am coming to a group of APs that are all part of the same ESS, which one should I go to?
- Question: Is there a way to have a response code that says "your query was too big"?
  - That exists. Should the response be truncated? Can a terminal use part of a query? That is a good error condition, but it may not work for the terminal.
  - Can terminals make use of a maximum query limit to not send big queries?
- Comment: We should err on the side of too much information and include as many IEs as possible in the query and how it may be used, then there is a case for including it.
- Question to 802.21 group: How big is the query?
  - Queries are defined in section of the draft specification. It would be possible to analyze typical queries and show the result sizes.
  - The query response size depends on the query, so you need to ask specific questions to get small query responses.
- Presenter comment: It is better to have small queries because it is simpler to implement on AP, and the station is not associated. It may not have paid for service, and is using overhead capacity to transport data.
- Comment: Common interworking queries are not necessarily the same as the common handover queries. A handover query might be "I am doing X, and I would like another data channel that can continue the session." Interworking is looking for a specific set of services on first attachment. 802.21 also is designed to do handover between networks that are not interworked for handover purposes. Interworked networks can get by on smaller queries, and 11u is targeted at that case.

#### Next steps

- We should have another joint session in November
- 802.21 will prepare a presentation for TGu and detailed responses on questions from today
  - Overview of 802.21 based on the tutorial in San Diego
  - How queries work and the typical sizes
  - Information Elements and how they are used in the network selection logic
  - Events and commands

Meeting recessed at 3:31 AEST.

#### Wednesday, September 20, 2006, 8:00 AM to 10:00 AM

Meeting called to order on Wednesday, September 20 at 8:07 am AEST by Harry Worstell.

A revised agenda was approved.

#### Discussion on 802.21 Joint Meeting

- Harry: Stephen indicated the meeting was intended to have TGu listening to 802.21. TGu presented a great deal of information, but did not receive much anything back. We need more detail than the tutorial.
- Dave: There was good interaction, though it would have been better for 802.21 to present more information. They have committed to doing that in November. One concern is they appear to be interested in dynamic info in the 802.21 IS and that may lead to lots of problems, so we need more discussion on that point.
- Harry: Prior to Vivek as chair of 802.21, we had an agreement with A.J. (the prior chair) to share drafts.
  - Harry took an action item to see if this agreement was still in effect.

**Presentation: 11-06/1507r0, Going Beyond Network Connectivity, Simon Barber**

- Changes GAS to extend it beyond querying an AP for service, and allows the query to be initiated to a service on the on the AP or in another IBSS.
- Question: What are the use cases?
  - They are in 11-06/1509.
- Question: What are the substantive changes?
  - Association must change to join because there is no association in an IBSS.
- Comment: Inventive idea that builds nicely on GAS transport protocol.

**Presentation: 11-06/1509r0, Advertising UPnP Services, Simon Barber**

- Allows UPnP discovery of services prior to authentication. Example 1: a hotel lobby advertises a wireless LAN that offers printing services, so the user is led to pick the network that has learned about the printer with UPnP. Example 2: when visiting a home, a digital camera searches for a TV set to display photographs.
- Question: Is the change just the two protocol IDs to GAS, or is there more?
  - That is the minimum change. However, there are other changes, specifically in 11-06/1507, that allow for the service to be provided over ad hoc mode.

Discussion question: Although interesting, this work may not fit within the PAR. Will this be a problem?

- The PAR purpose (item 14 in the PAR) discusses interworking with external networks and higher layers, so this appears within scope.

*Straw poll:* "Do you think TGu should incorporate 1507r0 into the next draft?"

- Vote: 12 yes, 0 no; abstentions not counted.

**Presentation: 11-06/1508r0, GAP Service Change Notification, Simon Barber**

- Use case: in the previously discussed case of the digital camera connecting the TV, if the TV is off, there will be no way to discover it. This allows a re-query and update of the display.

*Straw poll:* "Would you like to see the text of document 06/1508r0 included in the TGu draft?"

- Vote: 10 yes, 0 no; abstentions not counted.

*Straw poll:* "Do you think the protocol described in 1509r0 would be a useful addition to the TGu draft?"

- Vote: 12 yes, 0 no; abstentions not counted.

**Presentation: 11-06/1473r0, Multiple SSID support, Dave Stephenson**

- Question: Would it be simpler for clients to attempt preauthentication to discover services?
  - There is no binding between TGu ESSID and TGr mobility domain.
  - Follow-up question: What about 802.11i preauthentication? Attempt 11i preauthentication to all valid transition candidates, and only successful candidates would be able to preauthenticate.
- Question: How is this different from TGv support?
  - That is a virtual AP proposal, so it replicates Beacon components.
- Question: Will items other than RSN be supported?
  - Has not considered.
- Comment: This is very good for a carrier to enable sharing of networks. However, legacy support is also very important, and it may need to be solved in conjunction with TGv.
- Question: Where does 32 SSIDs come from?
  - Discussions with group, and the idea that 10-30 was a common upper bound for the number of providers in a hot spot.

*Straw poll:* "Is Task Group U supportive of 11-06/1473r0 and interesting in having authors draft normative text for potential inclusion into TGu draft?"

- Vote: 10 in favor, 0 opposed

### Teleconference and ad-hoc requirements

The group decided against an ad-hoc meeting before November because we will not be proceeding to an internal technical review before that meeting.

*Motion:* "Request the Working Group to schedule a Teleconference for TGu for the date of November 7, 2006 at 10:00am ET to last for 1 and ½ hours."

- Moved by Dave Stephenson, seconded by Eleanor Hepworth
- No discussion and no objection to calling the question
- Vote: 14 in favor – 0 opposed – 0 abstentions

### Agenda items for November

- Dave Stephenson will follow up 06/1473 with a normative text presentatio
- Review TGu draft 0.02
- Joint session(s) with 802.21 – possibly two time blocks because we ran out of time at this meeting
  - Volunteers to prepare a document for incorporation into the minutes.

There were no objections to recessing, so the meeting is in recess at 9:59 am.

### Thursday, September 21, 2006, 10:30 AM to 12:30 PM

Meeting called to order on Thursday, September 21 at 10:32 am AEST by Harry Worstell.

A revised agenda was approved.

### Timeline discussion

- We are waiting for inputs from 3GPP to complete the draft on the protection cluster, so the next probably draft will not happen in November 07. The first letter ballot would be issued in January if the work on the protection cluster could complete at the November meeting.
- Harry suggested that initial ballot be Jan 07, LB recirc in Mar 07, move Sponsor ballot to September 07, but leave the other dates the same.

### Presentation: 11-06/1463r0, TGu Draft Revision Procedure, Matthew Gast

- Question: How do we add new requirements?
  - New requirements may be added by changing the requirements document. The point of the requirement confirmation vote is to avoid insertion of new requirements at the last minute.
- Question: Is this a replacement of the downselection procedure, or an addition to it?
  - This is a clarification of the procedure.
- Comment: The existing downselection procedure requires a 75% vote of the task group to change. If you are modifying it, it would require a 75% vote.
- Matthew took an action item to incorporate this procedure into the existing downselection for a new vote.

### Motions on 06/1507r0, 1508r0, and 1509r0: Simon Barber

- Due to show of hands, Simon did not re-read the documents
- Discussion on the documents
  - Question: In 1507 sec 5.9.1, what is the difference between pre-join (the new text) and pre-associate (the old text)?
    - Answer: Stations only associate to infrastructure networks. However, they always join the network. This change removes the restriction of an IBSS.

*Motion:* "Move to instruct the editor to incorporate the text from 06/1507r0 into the TGu draft."

- Moved by Simon Barber, seconded by Dave Stephenson
- Debate on the motion
  - Necati Canpolat: Speak against all three motions. Providing advertising services to an IBSS may be outside the scope of TGu.
    - Simon Barber: This document extends the advertisement service to work over an IBSS. It is possible to use an IBSS to access external networks, such as providing an IBSS from an Internet-connected laptop.
  - Myron Hattig: IBSS devices are not that common, so this is not a case we should worry about.
    - Simon Barber: This is important for devices that have wireless node plus services in the device, such as a printing service on a wireless-enabled printer.
  - Necati Canpolat: TGu PAR clearly indicates external networks, and use of IBSS is not clear within the external network issue.
  - Eleanor Hepworth: This makes network selection applicable to IBSS and enables service advertisement on them.
  - Necati Canpolat: Discovering services within the AN is not an external network interworking function. This proposal takes the case of an external service and uses it to justify breaking the PAR for local services.
- No objection to calling the question
- Vote: 5 approve – 9 do not approve – 6 abstentions
- Motion fails. (75% required.)

*Motion:* "Move to instruct the editor to incorporate the text from 06/1508r0 into the TGu draft."

- Moved by Simon Barber, seconded by Matthew Gast
- Debate on the motion
  - Necati Canpolat: This is also part of the same package, and has the same scope concerns.
  - Eleanor Hepworth: This is an indication of the freshness of information, so it is hard to have scope concerns.
  - David Hunter: This might open a denial of service attack that would allow stations to ask to be updated
    - Simon: TGw will sign these information elements, which would alleviate that concern.
  - Simon Barber: This extends notification to allow learning information before the association. 802.21 helps after you are associated, but not before.
  - Necati Canpolat: The GAS is not encrypted and will not be protected by TGw.
  - Simon Barber: Without this mechanism, all stations must continuously poll for updates, which could be a more serious network problem.
  - Myron Hattig: Is there data that suggests that the polling mechanism is more efficient than designing an interrupt mechanism?
- No objection to calling the question.
- Vote: 6 approve – 7 do not approve – 7 abstentions
- Motion fails. (75% required)

Discussion of document 11-06/1509

- Question: The text states "The HTTP response shall be delivered in its entirety as the GAS response." This is an outstanding issue with fragmentation and reassembly. What is the maximum size of a UPnP response?
  - There is no maximum size, but the typical response size is small.
- Presenter question: what is a good size?
  - Dave Stephenson: It should be configurable by the AP administrator.
- Comment (David Hunter): It is very odd to talk about layer 2 requirements by saying that it shall contain HTTP and SDP headers. There is no layer 3 requirement in GAS.
  - GAS carries layer 3 protocols.



- Comment (Dave Stephenson): MIH protocols are served by a proxy, too, since the STA doesn't have an IP address and can't query the 802.21 IS directly.
- Necati Canpolat: Re-iterated layering and scope objections from previous two motions.

*Motion:* "Move to instruct the editor to incorporate the text from 06/1509r1 into the TGu draft."

- Moved by Simon Barber, seconded by Eleanor Hepworth.
- Vote: 3 approve – 9 do not approve – 8 abstentions
- Motion fails. (75% required)

#### **Discussion on requirements for the November 802.21 joint meeting**

- We gave 802.21 a presentation, what do we need?
- Currently, the draft is not available from the 802.11 members area. Harry will see to it that the 802.21 working group is added to the drop-down list on the main page (with WG officer pictures)
- Dave Stephenson:
  - Review query language, esp query response lengths
  - Way to define maximum message lengths in state 1 – merge proposal
  - They want to use dynamic information to have 802.21 CS to recommend initial AP. They should present on how that might work.
- Matthew Gast
  - The IEs stored in the IS and how they are used in the network selection logic
  - Events and commands – not sure what this means from previous notes?
- Dave Hunter: "Events and commands" mean the indications that flow down, and responses that flow up.
- Necati Canpolat
  - Feedback on specific 802.11 link layer information stored in 802.21 IS?
  - What are the MLME primitives and the details that they will send?
  - Recommended practice for deployment of services – where do servers live in the network? How are queries proxied?
- New ideas should also be sent to Stephen by e-mail.
- Based on the time limitations at this meeting, we wish to have multiple sessions.
  - It is better to plan on multiple sessions now.
- Eleanor Hepworth
  - 802.11u requirements for using GAS and discussion with 802.21 to ensure that MIH is in sync with those requirements.
  - Freshness of information.
- Necati Canpolat: Synchronization of information between AP and 802.21 IS.
- Dave Hunter
  - Ensuring security transfers in handover
- Matthew Gast: 802.21 talked about the difference between network selection and handover. What does that mean? For example, do they expect pre-provisioning of Qos?

Dave Stephenson created a presentation with our questions and uploaded it to the document server as 11-06/1543.

Seeing no other business, the meeting adjourned the meeting at 12:10 pm AEST.

**IEEE P802.11  
Wireless LANs**

**TG “v” Minutes for the September 2006 Interim**

Date: 2006-09-22

**Author(s):**

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**Abstract**

This document contains the minutes of the September 17-22, 2006 interim session at Melbourn, Australia.

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**IEEE 802.11 TGv Meeting Minutes**  
**10:30 – 12:30 am Monday Sept 18<sup>th</sup>, Melbourne**

10:35am – Chair called the meeting to order

Ch: Our secretary is not present at this meeting. I have volunteers for all sessions except this one. Is there someone who will volunteer to serve as secretary at this meeting?

TG: Dorothy Stanley volunteers.

Chair presented the IEEE-SA Standards bylaws on Patents in Standards, Topics inappropriate for IEEE WG meetings

Ch: Are there any comments or questions on the patent policy?

TG: No questions

Ch: Let's review the agenda, and get the document numbers for the presentations  
Agenda modifications made based on the available presentations, new presentations

Ch: Are there any other requests for time?

TG: No additional requests.

Ch: We have only one presentation on Wednesday. Is there any objection to moving that presentation to Tuesday and not meeting during the scheduled slot on Wednesday?

TG: No objection.

Ch: Seeing no objection, we will not meet during the Wednesday slot.

Ch: Are there any other questions?

Henry: Can we try to get the power saving presentations together?

Chair: Could move presentation to Thursday, but that is a conflict for Peter. Not really possible. Go with the proposed schedule.

Joe: Was there a discussion about swapping the k and v sessions on Thursday?

Ch: Yes, that was discussed, but the swap didn't happen.

Ch :Is there any other discussion?

TG: No further discussion.

Ch: Is there a motion to approve the minutes from the July meeting?

TG: Motion to accept the July meeting minutes: Moved by Allan Thomson, seconded by Dorothy Stanley

Ch: Are there any objection to passing this motion by unanimous consent?

TG: Seeing no objections, the meeting notes are approved unanimously.

Ch: Review goals for the week: Goals are to consider revised normative text submissions, consider motions on proposals, and to review progress on the objectives.

TG: No further discussion on goals.

Ch: First presentation is 1447r0: TGv Schedule, Dorothy Stanley

Ch: I'll take notes during Dorothy's presentation.

Dorothy: Task groups are not intended to have an infinite lifetime. Current expiration is Dec 2008 - we have 2 years left. Dorothy would like to try to finish the task group's schedule within the agreed upon time. Extensions to PARs are possible, but they are generally viewed negatively by some people in the standards space. The current schedule already shows extending past the Dec 08 date (currently showing a March 09 date, including sponsor ballot process).

What do we need to do to complete on time. We need to pull up the WG letter ballot interval, as well as the sponsor ballot interval. The WG letter ballot needs at least 12 months (TG<sub>i</sub> took 18, while TG<sub>k</sub> took over 24). A sponsor letter ballot takes at least 5 months (TG<sub>i</sub> took 5, TG<sub>e</sub> took 12). The presentation includes additional details on all of the task groups that have gone through this process, and the duration. We can't assume it will take 6 or 9 months for WG letter ballot we are fooling ourselves, no other group has achieved this.

The proposal is to change the following (this assumes WG LB duration of 15 months, and Sponsor Ballot of 6 months). There are two proposal for new dates below:

Initial WG LB: September 07, Change to November 06 or January 07

Initial Re-circulation: January 08, Change to January 07 or March 07

Initial Sponsor Ballot: July 08, Change to January 08 or March 08

Recirculation Sponsor Ballot: November 08 , Change to March 08 or May 08

Final WG=Final WC: January 09, Change to July 08 or September 08

REvcom/Std Board: March 09, Change to September 08 or December 08

Looking at historical data, it is prudent to assume at least 5 months for sponsor ballot. The dates have to match up with Revcom meetings, so the current proposals of September or December 08 aligns with their meetings. Option two pushes us up to our deadline of December 08.

The bottom line is that we need to get with the program, get the document in a shape that allows us to review and comment on it. The TG wants to have an internal LB ballot. Dorothy's read of the schedule is the sooner the better. Recommend an internal document review, for informal comments, at this meeting. This would be open to all, not just TG<sub>v</sub> members. I would further suggest that we schedule an October ad-hoc to work on comment resolution. There is additional motivation for the adhoc, which is that comment resolution (e.g., keeping a spreadsheet, grouping, resolving) is a process that we need to step up and contribute to. The information process is a good place to start with all of this.

It is advantageous to complete within the PAR. A couple of years ago, Andrew Myles gave a presentation on how the standards process is taking too long. The documents aren't getting out in time for people to be able to use. Working on a plan that pushes out 5 years is not good planning, and not how we should be approaching it. There will always be "one more thing" someone wants to add, but at one point, the funnel needs to narrow. Going out to letter ballot does not mean no changes can be made, people can still add new features, subject to the will of the torking group. It does mean that we are in the finalization phase of the document - the bar is raised.

Allan: Generally agree with you. Should try to meet he dates, but there were many discussions in the last meeting on where the group though we were, and they didn't believe we were ready. Agree we want to stick to the dates, but has something changed in the group's mind?

Dorothy: One discussion that has occurred is that it's not sure everyone realizes there's a deadline, and the impact of moving the dates. The second point is the discussion revolved around the objectives (should they be mandatory, should be included, etc). Dorothy's read is that people were not willing to rule out any objectives. Its one thing to say not wanting to meet an objective, but it is ok to say that now that we've created 130 pages of material, it is ok to move forward. Maybe we won't address all objectives, but that's ok too. If we identify an area that we didn't address, we can start a new PAR. We didn't have a view of the whole process in front of us.

Joe: I appreciate doing through the research on what's realistic in .11. As we get more experienced in the engineering realm, management expectations change.. Just thinking that we can get sooner doesn't mean we can. Perception is that long term schedules are unknown. The thing we see the clearest is the next step. At the last meeting, we tried to define the metric of the next step, which is holding a vote on when we through we were ready for the letter ballot. We can then track on a meeting basis on whether we feel we are ready. il is counter productive to try to change the schedule. It will end when we, as a group, feel it is done. If it takes longer, it will take longer. Modifying the schedule does not help, but hinders from work going on. Disagree to change the schedule once more, especially with the initial assumption that the current schedule is a red flag event. Most task groups extended their PAR routinely - it's standard procedure.

Dorothy: TGj, TGg, TGi TGh did not extend their PAR. TGa, b, f did not either. TGe and TGk did extend their PARs. The movement into March of 09 is just the beginning of the red flags that end up being raised. What this is saying is that the interval that we have from Sept 08 to July of 08 shows 9 months in the letter ballot phase - which has never been achieved. So this says that instead of March 09, it would push the date out to October 09. This is still optimistic. If we miss this, we are then in 2010. Agree the group has the best visibility into what's coming next, but you need to have a view into the mountains/stages ahead. We as a group have an obligation to the standards community to finish a document on time. You may have issues, such as TGe where high controversy pushes out dates, but this group doesn't suffer from this issue.

Henry: Some of the comment on when we are ready, we need to keep in mind it's not just this task group that is responsible for making progress, it's up to the WG as well. If we ask for an extension, we need to justify this to the WG. They could say no. If the work is no longer valuable when the extension request gets in, they could decide not to. If the WG decides we are not making enough progress, they could revoke our PAR. They could take the decisions out of our hands.

Emily: Would like to thank Dorothy for driving this discussion. This has been a topic we've discussed many times, to no result. Joe has discussed many schedule issues, but I fully support an internal review sooner (such as this month, of November). Given TGv 0.04 already has 150 pages, we have enough content to being an internal review.

Dorothy: Going to an informal document review this session (September 06), at the appropriate time (on Thursday), will bring a motion to do that. The schedule dates should be done as a motion. Could we schedule time on Thursday to discuss the internal review. We should plan for success. We have lots of good material, so let's do it.

Dorothy is back to being secretary...

Ch: Next presentation is 1390r0 by Allan Thomson et al, Extended Channel Switch Announcement. The presentation is in document 06/1394r0.

Allan: Existing channel switch announcement applies only to .11a. TGv should provide a mechanism to provide Channel Switch Announcement (CSA) for all regulatory classes. .11h defined CSA IE, and an action frame.

The proposed new solution extends .11h capabilities. Add a regulatory class octet to the IE and frame. Extended CSA used for all TGv compliant STA channel switching. Optionally, .11h CSA may be used when switching in the same band. A new Supported Regulatory class IE and an Extended Channel Switch Announcement information element are proposed.

Allan reviewed the normative text, showing changes to the beacon, probe response and action frames.

Joe: Can you explain the switch mode field on slide 5?

Allan: That field is defined in .11h.

Ch: If we add a field between two existing fields in the information element, how is backward compatibility handled?

Allan: We will use .11h for backwards compatibility.

Emily: This is a new IE, with no backward info.

Allan: Right.

Joe: For backward compatibility, would you send both old and new CSA?

Allan: That would only work with OFDM. It is questionable about how much backward compatibility is actually needed.

Allan: If .11h is used, use the existing (old) channel switch announcement. Legacy STAs won't know about the channel switch.

Joe: Use to switch announcement to change a channel, for non-tgv STAs, send old and new CSAs.

New STAs will understand the old information element too. When changing regulatory class, this is used. AP has to change regulatory class, want to take as many STAs as possible with me; extended CSA would work for .11b STAs also.

Joe: Found need for managed change of regulatory class, not necessarily channel switch. New regulatory classes have overlapping channel sets.

Ch: That means a band change.

Joe: Uncertain about how this will work with legacy devices. Understand duplicating the info in the beacons. Haven't thought about need for regulatory class change. Don't understand the author's intent with how this will work with the old channel switch announcement.

Ch: If decide to change channels in the 2.4 band – can't do this today,

Joe: In TGv and TGh capable terminals, the IE processing is band specific.

Ch: TGh applies to 5GHz only.

Allan: Want to reiterate that the CSA scheme was targeted to 5GH, now we want to target all bands, and add changes to do regulatory classes – for all new ones – e.g. TGy.

Peter: Good example is Japan –ch 13-14, have regulatory classes in ISM bands. In 5.8 is ISM, have 3 regulatory classes nearby and overlapping. The device will have to change a channel and a regulatory class.

Joe: In 2.4GHz, no CSA, this is the only mechanism. In 5GHs, recommend to broadcast both.

Allan: This is up to the implementer, could use new mechanism or both. Want TGv STAs to follow the AP.

Joe: Intent is not to provide a seamless channel awitch for all STAs, intent for TGv only STAs

Allan: Intent is for TGv clients to understand this. Today, only 5GHz clients use TGh. Channel switch capabilities.

Joe: See a compatibility issue – in normative text, indicate that both IEs are sent in the beacon.

Allan: The current normative text does not modify the existing CSA.

Henry: No restriction is placed on the CSA operation. AP can send both

Joe: .11h was done for regulatory reasons.

Peter: No, .11j was for Japan 4.9, created regulatory class. .11h finished first, only in 5.47 in Europe.

Joe: No, .11h has “regulatory” all over the text.

Allan: The text in 11.9.7.1, should this be a “must”.

Henry: Don’t require old CSA unless restrict to European specifications. Many applications in the future will build upon TGv , and will understand the new mechanism.

Peter: IEEE 802.11Rev-ma has generalized the regulatory classes. .11k has added for all bands and classes.

Joe: New item in csa from a regulatory point of view might be risky. Change the old one, use a shorter IE, to announce a regulatory switch. Don’t want to hit regulatory issues. Shorten the new IE to regulatory class switch only; don’t tie it to the CSA. This is an Interesting concept, change regulatory class without changing the channel; would be a major benefit.

Peter: Most of the time, when changing a regulatory class, change channel number. Want a countdown for both channel switch and regulatory class with one countdown.

Allan: We considered keeping them separate, but decided to combine them.

Ch: Do you want to make a motion? Joe, you have the BSS switch. Hold off motions until you make your proposal?

Joe: That may make sense, but is not required. There is considerable overlap between this and the BSS switch proposal; adds more data in the IEs. Leave it up to the author. No seamless acknowledgement of the switch from all STAs. Context on new channel when no STA in the BSS.

Henry: Question on .11h channel switch. What happens to the association data?

Ch: The data is not carried over.

Henry: The text is not explicit that associations are terminated.

Allan: **Motion: Move to include normative text in document 11-06-1390-00-000v-extended-csa into the TGv draft.**

**Discussion:**

Joe: Good, except for overlap. Suggest merging with another proposal later in the week. A good chunk of your work doesn't resonate. Want to add what we need, nothing that we don't need.

Ch: Any other discussion?

TG: No further discussion.

**Mover: Allan Thomson**

**Second: Emily Qi**

**Vote result: 12/2/2 Motion passes.**

Ch: Are there any additional presentation requests?

TG: No additional requests made.

Ch: I will post current updated agenda in about 10 minutes. We are done until 4:00 pm. Remind everyone to register for attendance.

We are in recess until 4:00 pm.



**IEEE 802.11 TGv Meeting Minutes**  
**16:00 – 18:00 Monday Sept 18<sup>th</sup>, Melbourne**

Meeting called to order, request for a temporary security to take the minutes. Nanci volunteered.

Pat indicated that a motion had been passed that had not been on the document server for 4 hours, and therefore was not invalid. It would need to be voted on again and should that occur during this session.

Joe recommended that the vote on the motion should be delayed in order merge the two overlapping channel switch proposals.

Alan agreed with the delay, indicating that tomorrow would be better to vote on both proposals that had been presented together for purposes of comparison, though he doesn't want to see the presentations combined but uncertain.

Emily's preference is to hold the votes together.

Emily presented WLAN Paging and Idle Mode, document 0950r4 for normative text in support of Power Saving objective in accordance with REQ2010.

**Andrew:** several assumptions were being made on this table, but don't you just have to pick a sufficiently good AP, not the best one? Emily countered that. Andrew: In the idle case it's not clear why you wouldn't want to find the best AP and in the legacy case why you wouldn't want to just find just a sufficiently good AP. The goodness of the solution is dependent on the assumptions of strategic choices, not clear that those presented are valid. They agreed to take this off line.

**Alan:** why the maximum was only three for average channels scanned for both 5GHz and 24GHz? Emily: for the beacon to send at a lower data rate, can cut it in half, go from 6 to 3.

Rajneesh: implementation complexity with the whole scheme, where you went into idle mode, who maintains the state of that station? Please walk through one VoIP call, a simple implementation. Emily: The paging server and switch to be in the same box. Explained how the incoming call was routed through the roaming with idle mode scenario. Pat: paging server

Thomas: Active Scanning, how do you derive the 30ms value? Emily: that was the value when we monitored.

**Qi:** Are the paging intervals among the AP's synchronized well enough? Emily: no, the paging interval is not synchronized. Qi: then there is a problem. What if this station keeps roaming, moving to different paging groups, the paging server can never find the roaming station because it take a maximum of one paging interval to find it? It's always one paging interval behind. Emily: active scan includes paging indication. Proactive way to minimize the delay.

**Andrew:** active probing is illegal in some 5GHz band channels, only allowed to do passive scanning. Having to scan all the channels all the time to find any AP when there is no AP is a high cost feature. This proposal is a tiny tweak doesn't solve the bigger problem. Emily: send a probe request only if it's allowed in the regulatory domain.

**Mathilde:** don't have to be as rigorous in selecting a channel but the penalty is that the beacons are longer, as the paging group consists of multiple APs . The approach has merit but increases the size of all beacons and there is additional overhead to maintain a paging server. Emily: Maximum is 256 and that element only sent at the paging interval, not every beacon.

Thomas: in some of the implementations beacon size is limited to 512 and may have a problem here. Emily: I will find out more about the beacon size implementation. Depends on how you define the paging level.

**Alan:** relating to the scale of the solution, for a typical enterprise environment, define number of APs. The paging server has to send a copy of the message to all APs, that packet has to go to all the APs and this represents a huge amount of traffic. Emily: paging group can be 20, but could range anywhere from 1 to 200, up to the administrator to define. The data packet is sent to the station, set that bit to 1. In that beacon paging interval, the paging server schedule is going to send out indication messages at each interval is there's one to send out. Alan: so if paging server sends out indication, the packet is ready and then when have another packet ready, queued up but need to send out another indication. How long is the server supposed to keep them? Emily: need to define the paging interval, the data is not going to keep coming because there was not response.

Rajneesh: scalability of the solution. Don't have a control, would be introducing a box to keep track. A switchbox, thereby increasing complexity. Emily: agree but thinks it makes the infrastructure much easier.

**Mathilde:** is the paging server supporting all the APs in the paging domain? Emily: yes.

**Alan:** is there any simulation data for the Awake Time Comparison Emily: not yet, working on that.

**Mathilde:** what happens when mobile users are close to the boundary of two paging groups? Emily: channel to receive page indication, find the beacon to listen to. Once it hears the beacon not in the paging group.

Jari: idle mode, is there any security issue? **Emily:** yes, this frame and idle mode request and the response can not be protected if send at a state 1.

**Roger:** regarding slide 14, the key to success is how fast client can transition across idle groups, the time it takes for a client to wake up, update the idle area, determine the presence of traffic, scan the neighborhood associate and then pull down buffered traffic is crucial to the success of this proposal. If that time is fast then power savings can be substantial. Is there a timeout mechanism, will the server continue hitting the clients forever? **Emily:** there is a keep alive timer, if a station misses two or three idle mode update the paging server assume the idle mode station move out of the paging domain. Station had to send the idle more update before the timer expires.

**Joe:** why is this beneficial? Standard upgrade procedure, when add to the standard due analysis cost vs. benefit. Added complexity that is redundant. What does it offer compared to what we already have in our current sleep mode which saves 98% power. This enhances mobility but

gives only about another 1 or 1.5% improvement. Is this a good trade-off when it adds additional complexity for minimal power saving. What does the WNIC chart really mean?

**George:** It doubles the power savings, take a STA with a one hour battery life when always on, then 98 per cent power saving yields 50 hours, and 99 per cent yields 100 hours which is a very significant gain.

**Roger:** we need to think about what happens when the client exits the network with this mode turned on. It is a tenfold improvement,

**Joe:** we are doing all of this for 1.5% more.

**Roger:** this chart, roams in idle mode, it's not a one for one. I interpret Emily's data as comparing 2 percent to 0.2 percent that is ten times difference. The improvement might be greater given longer idle times as oscillating roams and panic scans will be reduced.

**Alan:** how is roaming going to be less than normal case?

**Roger:** present mode, any intervening, depending on how the client does his roaming will be over longer time periods, more than one roam..

**Dorothy:** Station only needs to wake up and associate with a fraction of the APs.

**Andrew:** there are many scenarios where there is no AP but looking for any AP, much less one that you really want, is very costly.

**Dave:** Waking up every two seconds. The roam rate is driven by user mobility rather than the wake time. Showing percentage, in a two second sleep interval, client will only move about 8 feet which is still in the range of the same AP. Chart showing percentage of time client was asleep, can you convert percentage of sleep to standby time would be a better metric. Emily: she will try to come up with that.

Jari made a presentation, document 0646r6

**Mathilde:** Is the intention to create something like a TSPEC for the interference? **Jari:** Intention of the scheme is how the device having co-located radios can report the interference.

**Alan:** Is the assumption that single interference can be reported one time, if there are multiple instances, does the packet record all of them or is it one packet per interference. **Jari:** Yes, current proposal is limited to single interference type per each report. However, the proposal can be extended to cover multiple interference reporting. This can be done either by allowing multiple response fields or using some kind of hybrid signature. **Alan:** is there a positive acknowledgement that the AP received the report? **Jari:** No, No, just normal ACK.

**Brent:** a specific example, lot of stations out there and an external device like a microwave could cause interference. Are all the stations going to report interference? **Jari:** No, with this scheme only co-located interference is reported, not external.

**Mathilde:** Can you control AP downlink transmissions by going into power save mode to prevent this interference? **Jari:** not possible in all cases. Want to receive downlink transmissions from the AP, buffer the downlink, by using this it is not possible to control. It is not necessary to stop the downlink transmissions; the interference level is not very high it can try to use rate adaptation.

**Henry:** confused as to how the device knows about this interference. How from a .11 standpoint, where does that information get derived? **Jari:** If you have those 2 radios operating in the same system you will know what is the interference level the systems are causing each other when operated simultaneously. **Henry:** no standard interface for providing this information to the .11 MAC. **Jari:** No, the interface can be proprietary.

**Brent:** when the interference starts, do you characterize it and send for a few ms or continuously? **Jari:** STA can send the report immediately.

**Alan:** wondering why restrict the mechanism just to co-located interfaces? Why not include 802.11 interference source. **Jari:** this was discussed but it will open up too many other issues, better to have a simpler scheme. If extend to external interference, then it means the STA has to perform real measurement. **Alan:** why can't you apply to 802.11? **Jari:** Have to do real measuring.

**Malthide:** if collocated radios are used, the station can send the notice to the AP before the interference even starts.

**Joe:** TGk was unable to come with a solution, TGv has an opportunity to define a measurement for external interference. V would supplement what K has done.

**Jason:** how does the client know how severe the interference problem is? A system may actually offer little interference. **Jari:** It is assumed that the device knows what is the level of interference caused by other radio system if operated simultaneously. **Jason:** maybe different coupling levels from product to product due to variability, could report a problem when there really isn't one. Some measurement of the problem would be useful.

**Roger:** It is unclear how to fill the interference level field out for bluetooth given different levels of interference dependent on if the bluetooth transmission is in channel or not. **Jari:** interference level indicates the highest interference level.

Motion to include normative text in document 0645 into the TGv draft. Jari moved, Dan Harkins seconded. 13 for, 16 against, and 8 abstain. Motion failed.

Meeting was adjourned at 6:00pm.

**IEEE 802.11 TGv Meeting Minutes**  
**10:30 – 12:30 Tuesday, Sept 19<sup>th</sup>, Melbourne**

Call to order 10:34

Allen Thompson and Emily wants motion  
Swap agenda item Managed object response with power save concepts

Moved motion because late on 4 hour rule yesterday

**Motion**

Move to include normative text in document 11-06-1390-00-000v-extended-csa into the TGv draft

Moved: Allen Thompson

Second: Emily Qi

Approve 27 Do Not Approve 2 Abstain 6

Motion Passes

**Motion**

Move to include normative text in document 06/0945r5 into the TGv draft.

Move: Emily Qi

Second: Kapil Sood

Approve 19 Do Not Approve 16 Abstain 4

Motion Fails

**Presentation:** Joe Kwak - 11-06-1485-00-000v BSS-Switching (merged document)  
80% of 2 papers 1390r0 and 387r3 were the same and has been merged.

Allen Thompson would like his name removed from the document due to not being able to review the document prior to it being presented.

Joe Kwak indicated that the majority of the paper is the work of Allen.

Joe then continued to show the differences between the documents.

**Discussion**

Emily: would like to see a difference document between documents 1390r0 and 0387r3

Allen agreed with Emily but fundamental difference is one to a notification and the other is a response

Andrew: This is a complex protocol so what is the benefit of the protocol

Joe : there is only one addition which is one response

Andrew: would like to know how often it is used

Joe: only has to happen once.

AP has no knowledge of switching and would be acting on false pretenses. A simple ACK after the switch would be a benefit and prudent at best.

Chair: Case already exists

Joe: 100% of STA will ACK

Will give a better option and knowledge

This adds the regulatory class

Broadcast switch announcement is optional and in both proposals but some people don't feel it's needed. (Is the response required?) These are tool box giving operators the choice to use.

Andrew: Characterize the difference of proposals

Joe: the only difference is the response frame

Same function different names.

Chair: Document posted 9:45am today

Motion will be done this afternoon

**Presentation:** Marian Rudolf - 06/1469r0 Multi Level Power Control

Has been on server since last meeting

Marian also went over document 06/1068r7.

**Discussion:**

None

**Motion**

Move to include the substantive text in normative text submission 11-05/1068r7 into the TGv Draft

**Move:** Marian

**Second:** Rodger Durand

Approve 7 Do Not Approve 8 Abstain 17

Motion Fails

Joe Epstine has next presentation---not in the room

Any request for time

Agenda is complete for this time slot

Chair: is ther any objecton to resess until 4:00PM today.

None

The group is recessed.

Minutes for the TGv Tuesday 4:00-6:00 meeting

Chair: Call to order

06/0711 object request response is being pulled from the agenda and the authors are not going to pursue the subject anymore.

**Presentation:** Dorothy Stanley 06/1454r0 Air efficiency and reliability enhanced multicast frames.

Draft text is document 06/1398r0

**Discussion:**

Allen do you require individual stations use the same data rate

Dorothy: No it is not required. The AP decides if duplication is used.

Allen: if multiple stream and rf varies the AP does a lot of work

Dorothy: Give the AP of the rate of reception

Dave; What Services to be carried by a higher rate and what changes are being made to power save

No changes to Broad cast services, provides AP and STA to communicate at higher rate and less time on air.

Allen: DTIM limits air time

independent variable of system that must be adjusted.

Allen: characteristic of MDRB is power save aren't you requiring the STA to report back

Dorothy No they are not,

Joe: replication of multi cast is a step in the wrong direction. The chart is misleading because it doesn't show the benefit. All streams will not be in the rate of the highest data rates due to probability. Added efficiency only in the 5-10% area.

Dorothy: Perfect world replication would not be needed. At higher data rates shows efficiency

Joe; there is never benefit to replication.

Dorothy depends on deployment. offers significant value

Qi in favor of retransmission

Dave does this break the rule of multicast

Rodger Durand; AP already do this if it keeps track of clients. always gain to transmitting at higher rate

James: Use of sequence number?

Dorothy: Identify the interval to the AP Client know the number of frames it receives.

Allen: if you miss the seq number how does the sta report to AP

Dorothy if frame is missed the sta doesn't receive the frame not something being reported

Henry: Might have some value and some areas it will work. The rates are not linear.

Beam forming is an example

**Motion**

Instruct the editor to include the changes in the document 11-06-1398r0-air-efficiency and reliability enhancements multicast into the TGv draft

**Move:** Dorothy

**Second;** Thomas Kuehnel

Approve 10 Disapprove 9 Abstain 7

**Presentation** Peter Eccelsine 1461r0 Speculative Power Save

**Discussion:**

Joe: Productive idea. easy to implement. if in header it is not as reliable. extension of adaptive windowing might be useful trade off. This could have the APs go to sleep during night time periods. Long intervals could have unreliable wakeup times.

Brian: Vendors might have user that bit for proprietary reasons.

Rodger: Great idea.

**Straw Pole**

Move to create normative text describing SPS for inclusion into the TGv draft  
in favor 20 not 9

Completed agenda

Recess



**IEEE 802.11 TGv Meeting Minutes**  
**16:00 – 18:00 Thursday, Sept 21<sup>th</sup>, Melbourne**

Chair: Call to order

**Presentation:** Joe Kwak 11-06/1460r1 Preferred Channel Power Saving(11-06/956r1)  
Normative text 1462r0 Using cellular-like techniques for a pseudo-control channel

**Discussion:**

Bob O: 5GHz band regulatory req for uniform spreading and it will not be permitted to be used (random channel selection) Directly in conflict to regulations

Joe: this is not required for all cases

Bob : other areas in a densely populated area the AP can not deliver the same service of the other APs.

Chair: we are out of time

Straw Poll: Do you support use of Net Advice on designated Preferred Channel to improve STA power saving.

2-8-13

**Presentation:** Dorothy Stanley 1447r1 TGv Schedule

Update to discussion on Monday

**Discussion**

Rodger Durand: Does the editor feel it is possible;

Editor yes

Allen Thompson: In favor doing informal comments

**Presentation:** Dorothy Stanley: 1454r1 and 1398r1 Air Efficiency (Normative text)

Modified/Updated from earlier in the week

**Discussion:**

Do we add explicite text to prevent a sing mc strea from being transmitted

Rodger; Support this now one area of concern how does a new client gets added to new stream

Dorothy AP receives the message and uses the policy in use at the time and can denies the sta or moves the rate to new rate.

Can the STA trigger this mechanism?

STA would send the element in action frame

Allen: if AP decides to change rate everyone gets updated?

Dorothy AP says sorry-no or lets the STA in and adjusts rate

Co Author: can always send stream at constant rate

Allen send as new rate and update

Dorothy not mandated

How does the sta can receive at a highr rate?

1 diag report or fdms request element can be sent

No other questions

**Motion**

Instruct the editor to include the changes in document 11-06-1398r1-air efficiency-and-reliability-enhancement-multicast into the TGv draft.

**Move:** Dorothy

**Second:** Rodger Durand

Yes 13 No 1 Abstain 5

Motion Passes

Dorothy Stanley: on document 1447r3

**Motion**

Instruct the editor to create a TGv Draft 0.5, incorporating accepted text from the September 2006 meeting.

**Move:** Dorothy

**Second:** Allen Thompson

Yes 18 No 0 Abstain 0

Motion Passes

**Motion**

Request informal comments on the Draft D0.05 beginning on or before September 29<sup>th</sup>, 2006 and continuing for 30 days completing on or before October 30<sup>th</sup>, 2006”

**Move:** Dorothy Stanley

**Second:** Allen Thompson

Approve 17 Do Not Approve 0 Abstain 1

Motion Passes

**Motion**

Move to empower a TGv teleconference on the following dates:

October 31<sup>st</sup> 11:00 EST

November 7<sup>th</sup>, 11:00 EST

**Move:** Dorothy Stanley

**Second:** Henry Ptasinsky

Approve Unanimous consent

**Motion**

Move to recommend that the TGv to recommend the TGv chair adjust the published schedule dates to complete within the current PAR

- Initial Working Group Letter Ballot : January 07
- Re-circulation Working Group Letter Ballot : May 07
- Form Sponsor Pool: July 07
- Initial Sponsor Ballot: March 08
- Recirculation Sponsor Ballot: May 08
- Final EG/EC approval: November 08
- Revcom/Standards Board Approval: December 08
- IEEE Publish: January 09

**Moved:** Dorothy

**Second:** Henry Ptasinsky

Yes 14 No 0 Abstain 2

Chair reviewed the Objectives

Yellow is progress

Blue is progress

2 changes

Client management should become white REQ 1500(not Done)

Channel Selection is completed

**Plans for November**

Review see slide 26 1430r4 insert next steps

**New Business**

none

**Old Business**

none

Adjourned

**IEEE P802.11  
Wireless LANs**

**Sep 2006 Protected Management Frames Minutes**

Date: 2006-09-30

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Minutes of the IEEE 802.11 Task Group w meetings recorded during the September 2006 Interim Session in Melbourne, Australia.

This document contains the minutes for the following TGw session(s):

- Monday, September 18<sup>th</sup> – 4:00pm (PM2)
- Wednesday, September 20<sup>th</sup> – 8:00am (AM1)

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Monday, September 18, 2006

4:00 pm

Call to order

Agenda for this session is 11-06/1431

On line attendance reminder

Appointment of Temporary Secretary  
Frank Ciotti (for this session)

The chair reviewed 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.

Approval of Agenda:

- Any objections to agenda framework?
- Adopted by unanimous consent

Approval of Minutes:

Approval of document 11-06/1050r1 - Meeting minutes from July 2006 meeting.

- Any objection?
- None – minutes approved

Approval of document 11-06/1434r1 - Meeting minutes of Aug 17, 2006 teleconference

- Note: These minutes were uploaded to the server just this morning.
- Any objection?
- None – minutes approved

Agenda Discussion:

- Add document 11-06/1444r1 – Henry Ptasinski - CCMP Nonce Construction

Chair's Status Update and Review of Objectives for the Session

- Nancy Cam-Winget: 11-06/271r10 corresponds to Draft D0.04

Presentation: Henry Ptasinski – doc 11-06/1444r1 – CCMP Nonce Construction

Discussion:

TGn defines Management Action Frame inside an AoS NULL-Data frame

This will go away in TGn but TGn is still likely to provide prioritized management frames..

On slide 10, for the third approach (flag in Priority Octet field), how would the priority for management work? There are no bits left in the frame sub-type. There is a QoS-Data sub-type.

There is one additional Type available, but don't recommend that we use that.

So given this, carving up the PN space and the negotiation for this is about the same amount of work.

Even if we use the PN space scheme, there still needs to be something in the header to indicate it is a QoS frame. This is orthogonal to approach 2 or 3.  
In an environment where there is an AP and also a Switched architecture, how would you keep the PN spaces separate to avoid collisions?  
There are issues in that situation with keeping keys in two locations.

**Motion at 4:50pm: Move to include normative text in document 11-06/1063r1 into the TGw draft.**

Mover: Henry Ptasinski  
Second: Kapil Sood

Discussion:

On page 2 of the text clause 8.3.3.3.3, the old text stated the Priority Octet field shall be set to 28. Where did that number come from?  
Not sure, but that text goes away in the new text.  
In favor: Of the 3 options we have discussed, this is the more sensible option

Result: 25-0-4 Passes

**Motion at 4:56pm: Moved, To adopt the comment resolutions for comments 125, 127, 128, 129, 137, 147, 150, 151, 157, 160, 167, 178, 180, 200 in 11-06/271r10**

Mover: Nancy Cam-Winget  
Second: Kapil Sood  
Discussion: None

Result: 16-0-6 Passes

Chair Update: Comment Resolution Status:

Based on the previous two motions passing, only comments 53, 68 & 155 remain that require submissions.

The resolution to Comment 53 (06/931) has been accepted by the commentor.

**Motion at 5:22pm: Moved, To adopt 11-06/931r0 as the resolution of comment 53 in 11-06/271**

Moved: Kapil Sood  
Second: Nancy Cam-Winget  
Discussion: None

Result: Passes by unanimous consent

**Motion at 5:25pm: Moved, to adopt all of the non-green, non-yellow comment resolutions 11-06/271r10 except 53, 68 and 155.**

Moved: Nancy Cam-Winget  
Second: Frank Ciotti  
Discussion: None

Result: Passes by unanimous consent

Straw Poll by Kapil Sood:

**Should TKIP support be removed from TGw?**

Discussion:

Has this been removed for TGn?

Only for Aggregate MSDU's

TKIP will be removed for the TGn Ad-Hoc mode

Result: 20-0-1

**Motion at 5:33: Moved, Direct the editor to remove TKIP from the TGw Draft and adopt this action as the resolution of comment 68.**

Moved: Kapil Sood

Second: Clint Chaplin

Discussion:

Speak in favor and call the question.

Result: 18-0-2 Passes

**Motion at 5:40pm: Direct the editor to incorporate the comment resolution adopted by TGw today and produce D0.05.**

Moved: Kapil Sood

Second: Nancy Cam-Winget

Discussion:

None

Motion passes by unanimous consent

Chair: Is there any need to meet at the 8:00am Tuesday time?

No requests were made

Recessed until 8:00am Wednesday by unanimous consent.

**Wednesday, September 20  
8:00 am**

Meeting called to order  
Chair: Donald Eastlake  
Secretary (Acting): Nancy Cam-Winget

Chair: Reminder to do attendance online.

New Draft D0.05 is now available at  
[http://802server.events.ieee.org/11/Task\\_Group\\_Temporary/TGw/](http://802server.events.ieee.org/11/Task_Group_Temporary/TGw/)

**Moved to adopt 802.11w Draft D0.05**

- Passed by unanimous consent

2 outstanding items:

- 2 outstanding yellow comments and 1 submission (11-06/1472r1)

Editor: Discussion of yellow shaded comments in 11-06/271r11

- **CID 28 changed to Green, resolved, by unanimous consent.**
- **CID 39 changed to Accept & Green by unanimous consent.**
- **CID 165, wording clarified and changed to Green by unanimous consent.**
- (an r12 of the comment resolution spread sheet will be uploaded)

Discussion of submission 11-06/1472r1 by Kevin Hayes

**Moved, To adopt the changes in 11-06/1472r1 into the current draft as the resolution of CID 155**

- Passed by unanimous consent

**Moved, to direct the editor to incorporate the changes approved earlier in this session and produce a Draft D0.06**

- Approved by unanimous consent

**Recessed for a half an hour**

while the D0.06 Draft was prepared and uploaded to the Task Group temporary area.

*Believing that 802.11w draft D0.06 satisfies all WG 802.11 rules for letter ballot,*

**Moved,**

**To request the 802.11 Working Group to authorize a 40-day Letter Ballot asking the question “Should 802.11w draft D0.06 be forwarded to Sponsor Ballot?”**

- Moved by Nancy Cam-Winget,
- Seconded: Fabrice Stevens
- Motion passes: 7-0-0 (yes-no-abstain)
- [This was then also passed by the 802.11 WG at the closing plenary.]



**Moved, to authorize a TGw teleconference to discuss the TGw schedule for the Dallas meeting and other matters at 11am Eastern Time, Thursday 2, November 2006**

- Approved by unanimous consent

**Adjourned** sine die by acclamation

**IEEE P802.11  
Wireless LANs**

**Minutes Melbourne September**

Date: 2006-09-22

**Author(s):**

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Rich Kennedy	ETS-Lindgren			

**Abstract**

Tentative minutes for the Melbourne session of TGy.

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Monday PM2

Meeting called to order at 16:03

Peter asked for a volunteer to be recoding secretary. No response.

Rich Kennedy volunteered to take notes

Peter read the required meeting header information.

He asked if anyone did not understand the patent policy? Hearing none.

Are there any Matters the chair needs to be informed of? Hearing none.

Peter reviewed the proposed agenda.

September 12 meeting minutes were not added to the server, so we will only be reviewing and approving the minutes from July.

Peter read a summary of activities (minutes) from the July meeting.

Are there matters arising from the July San Diego meeting? Hearing none.

*Are there objections to approving the minutes of the July San Diego meeting? Hearing none.*

Any changes to the agenda besides moving teleconference minutes to the Tuesday session? Hearing none.

*Any objections to approving the agenda with the one change? Hearing none.*

Peter brought up document 06/1023r0 and summarized it; a review of the history of TGy.

Peter brought up document 06/1024r2 and discussed the motion that included draft text from 06/855r3

Peter stepped down as chair (Rich Kennedy acting as chair) to present 06/955r2; an update of document 06/855, due to changes of REV-ma and teleconference discussion: channel selections and the selection of CCA-ED.

Any comments of Peter's presentation? Hearing none.

*Peter proposed a motion:*

*Move to instruct the editor to incorporate the normative text proposed in 06/955r2*

*Second: Amer Hassen.*

*Approved by unanimous consent. (13 802.11 voting members).*

Peter has suggested a change to the agenda because PHY topics have been exhausted, to advance topics from Tuesday's agenda.

Peter asked if members would like to hear a review of 06/864r3. Members did want to hear the review.

Peter reviewed the document, 06/864r3, "3650 MHz Mobile Service Enablement".

Peter asked for questions or comments.

Question (from Prabodh Varshney):

1. On page 1 what is the difference between a fixed station and a base station?
  - a. A base station can register other stations, a fixed station is a station with a fixed location, but cannot enable other stations.

Question (from ?)

One of the documents did not have a number. What was it?

It is 06/1023r0, and has been on the server; the formatting is just not correct. It will be corrected and resubmitted (with correct formatting) as 06/1023r1.

*Peter proposed a motion:*

*Move to instruct the editor to incorporate the normative text proposed in 06/864r3*

*Second: Amer Hassen.*

*Approved by unanimous consent. (13 802.11 voting members).*

No objection to recessing until Tuesday at 8:00.

Voting members present 13.

Total attendance 35.

Tuesday AM1

Peter called the meeting to order at 8:00am.

Peter reviewed the agenda for this session and asked if there are any documents to be presented.

*Peter made a motion to accept the minutes of the teleconferences. No objections were heard.*

Allan Thomson presented 06/1433r0 "11-06-1433-00-000y-extended-channel-switch-announcement-presentation.ppt"

Allan asked for any comments/questions on the presentation.

Eldad asked how does channel switching currently work in 2.4GHz

Allan: It doesn't. 802.11h only addresses 5GHz.

Eldad asked about how channel switching is done in 2.4GHz.

Peter: it is not organized like it is with .11h.

Eldad asked if there was a way to coordinate this between TGy, TGv and TGn. Maybe it should be presented in the TGn coexistence group.

Allan: It was presented in TGv yesterday.

Peter: TGp has addressed multiple regulatory classes. This mechanism can be used anywhere that regulatory classes have to be changed when channels are changed: it is very general.

*Allan made a motion: Move to include normative text in 11-06-1432-00-000y-extended csa into the TGy draft.*

Eldad said he wants to see the TGn response to this approach. He asked how many were in attendance at TGv and what were the votes against it.

Peter stated that Joe Qwak had a different scheme he wanted.

Eldad asked, if it was a vote in TGv, will this text be in both TGv and TGy.

Peter said it will be in both, so that when one is approved, it becomes part of the base spec, and the other would then drop it from their draft.

Mover: Allan Thomson  
 Seconder: Rich Kennedy  
 Vote: 3/0/1, motion passes.

Peter proposed a change to the normative text just voted in.  
 He submitted an interpretation request to TGM regarding the response to a Reserved First Channel Number or Reserved Regulatory Class in a CIE.

Motion: To instruct the editor to include the following text...  
 Motion after 06/1432 motion

Move to instruct the editor to include the following normative text in TGy D0.01 and modify the PICs accordingly

### 9.8.3 Fourth paragraph

Where dot11RegulatoryClassesRequired is true, or where Regulatory Classes domain information is present, and the STA parsing a Country Information element finds a First Channel Number or Regulatory Class with a Reserved value, it shall ignore the remainder of the information element and shall parse any remaining management frame body for additional information elements.

### Annex A A.4.10 Regulatory domain extensions

Insert new entries at end of table:

Item	Protocol capability	References	Status	Support
<a href="#">MD13</a>	<a href="#">Reserved First Channel Number</a>	<a href="#">9.8.3</a>	<a href="#">CFy:M</a>	<a href="#">Yes</a> <input type="checkbox"/> <a href="#">No</a> <input type="checkbox"/> <a href="#">N/A</a> <input type="checkbox"/>
<a href="#">MD14</a>	<a href="#">Reserved Regulatory Class</a>	<a href="#">9.8.3</a>	<a href="#">CFy:M</a>	<a href="#">Yes</a> <input type="checkbox"/> <a href="#">No</a> <input type="checkbox"/> <a href="#">N/A</a> <input type="checkbox"/>

Moved: Peter E.  
 Seconded: Allan Thomson  
 No comments  
 Vote: 5/0/1. motion passes

Peter summarized the results of the Monday session and this session.

8 voting members; 11 members total present at recess. 8:31am

Thursday 16:00

Thursday PM2

Peter called the meeting to order at 16:04 (local time).

Peter reviewed the agenda and asked for any changes. None heard.

Peter projected the TGy draft (D0.01) and discussed some of the details including the revision information, the new definitions, terms and normative text.

Peter asked if there were any comments. None heard.

**Motion:** (8)

Move to accept the text posted on the website as the P802.11y D0.01 draft document

Moved: Rich Kennedy

Second: Malik Audek

Objections: none

Vote: Y/N/A: 2/0/0

**Motion:** (9)

Move to direct the chair of TGy to issue a call for internal technical review comments on Draft D0.01 with comments due by 22 October 2006.

Moved: Rich Kennedy

Second: Malik Audek

Objections: none

Vote: Y/N/A: 2/0/0

Peter declared the work completed.

Members present: 4

Voting members: 3

Motion to adjourn: Malik

Second: Rich Kennedy

Objections: none

Adjourned at 16:52 (local time)

References:

06-0855-03-000y-annex-and-j-3650-mhz-band

06-0864-03-000y-3650-mhz-mobile-service-enablement

06-0955-02-000y-ofdm-phy-3650-mhz-band

06-1432-00-000y-extended-channel-switch-announcement-normative-text

06-1466-02-000y-TGy-September-chairs-report.ppt

P802.11y D0.01

**IEEE P802.11  
Wireless LANs**

**Minutes of WNG SC September 2006 Session**

Date: 2006-09-19

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**Abstract**

Minutes of WNG SC meeting held during the IEEE 802.11 interim session in Melbourne, Australia from September 17<sup>th</sup>-22<sup>nd</sup>, 2006.

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Extensions to DLS: 11-06-1478r0, Simon Barbar.....	2
Traffic Aware: 11-06-0912r0, Zhang .....	4

## **Executive Summary**

- |   |              |
|---|--------------|
| 1. 802.11a in Outdoor Mobile Environments | 11-06-1339r0 |
| 2. Extensions to DLS                      | 11-06-1478r0 |
| 3. Traffic Aware                          | 11-06-0912r0 |

## **Morning Session Tuesday 08:00 – 10:00**

WNG SC (Wireless Next Generation Standing Committee) Meeting called to order by TK Tan at 08:00.

The IEEE 802 & IEEE 802.11 Policies and Rules were reviewed.

Patents and By-laws read out by TK Tan, together with licensing terms and associated conditions.

The agenda was reviewed (11-06-1451r0). No comments were raised.

The minutes from the May 2006 meeting (11-06-1093r0) were reviewed. No comments were received.

Move to approve minutes

Second: Guido Hertz

Unanimous

### **IEEE 802.11a in Outdoor Mobile Environments: 11-06-1339r0, Paul Alexander**

Provides an overview of the challenges facing the use of IEEE 802.11a in outdoor mobile environments, and suggests some ways to mitigate these problems. These solutions have also been trialled.

Question: what is the transmit powers?

Answer: transmit power is within regulations.

### **Extensions to DLS: 11-06-1478r0, Simon Barber**

There is a market demand for DLS schemes that can operate across legacy APs. Very few APs implement IEEE 802.11e, so there are few APs that can set up DLS links, and this situation may not change near term. This work has been discussed by a group of interested parties meeting within WFA and they would like to bring the work into IEEE to allow an open process for developing a standardised solution to this problem.

It is not possible to cover these modifications in rev ma, so this is a request for a new SG so that a PAR + 5C can be put together for a new TG that has a very narrow scope to address this specific problem very quickly. Measurement aspects can be covered in IEEE 802.11k.

The following motion was proposed:

Move that the WNG SC recommends that the IEEE 802.11 WG form a Study Group to examine DLS operation with non-802.11e APs and to examine power saving extensions to DLS with the intent to create a PAR and 5 Criteria to form a new Task Group.

Question: do you already have a particular solution in mind? You are trying to address a very specific problem, do you already have the solution and you are just not sharing it here?

Answer: not showing solutions right now as there is still a need for discussions as to the best way to tackle the problem. We haven't determined what the right solution should be and the IEEE process is a good way to do this. If this work does not happen here, it is likely that we will end up with multiple proprietary solutions. Everyone benefits from for a standardised approach. Devicescape for have a proposal (11-06-1053r0), but this is not a complete proposal, and no agreement has been reached. We would like to see a TG formed with an open process to determine the best solution.



Question: Can you briefly describe what the upgrades that are needed in the AP to support the other DLS approach?

Answer: in the current DLS protocol, the setup messages are sent from the client as a management action frame to the AP, so the AP must be able to parse and understand the management action frames, create another one, and forward it to the other client. IEEE 802.11e specifies this operation, but very few APs support this. Most of the setup could be done using frames encapsulated as data frames, which can be forwarded between clients.

Question: how is this different from a very degenerate mesh already used in IEEE 802.11s.

Answer: it's different in several ways. Operation in an infrastructure DSS and the security and usage model is clearly defined and well understood. For mesh it is slightly different. The mesh PAR talks about meshing between APs, whereas DLS is specifically between clients. So the mesh AP is more complex and a richer device than the simple client device that DLS is implemented in.

Question: what are your thoughts about security – WPA/WPA2?

Answer: we want to operate without upgrades in the AP, and one of the most important parts is to develop a protocol to set up security keys over direct links. 11ma includes the PeerKey proposal, which requires involvement of the AP, but the only thing the AP has to do is generate the master session key. Could consider a case where one client could generate the master session key, and come up with a slightly modified PeerKey protocol that could operate without the AP.

Question – Please could you elaborate on the usage scenarios?

Answer – DLS provides performance enhancements. If you are transferring data from one client to another within the same DS than the traffic is sent to the AP then forwarded over the air to the second client. This will halve the total throughput you can achieve. For some applications, this can stop them working altogether. One scenario is the home environment with a personal video recorder and TV set close together, and an IEEE 802.11 AP or gateway near you phone line at the other side of the house. To transfer standard or high definition video between the two devices, it would have to go all the way across the house and back again, and this may not be at a sufficient data rate to play the video. So, DLS would allow the application to work properly. Another example would be the transfer of mp3s between two laptops. It's applicable to both home and enterprise.

Question: I don't fully understand the motion – I believe the idea mentioned is to enable DLS In the context of WMM, does this mean we start requiring these functions to be in the AP? How can we specify that we want to upgrade if AP is not 802.11e?

Answer: what we're proposing here does not specify WiFi specific functions at all, it will work for non-WMM APs. This should only require modifications on the client side.

Question: the purpose of forming a study group is to put together the PAR/5C, so I don't believe it's necessary to have all 5C now, it is up to the SG to work those out. Is this correct? We in WNG just need to decide whether or not this technology is worth further study.

Chair: the purpose here is not to define the PAR/5C in WNG, what we're trying to do here is just to understand as WNG whether the work here warrants development within a study group.

Comment: we're not asking how the technology is going to work, or what it's going to do, we are forming a group to figure this out.

Chair: the alternative is to have some of the existing task groups take on this work.

Comment: the measurement aspects can be taken on within TGk, but the operation with the legacy APs and power saving does not fit within any existing TGs. The study group will write a restricted PAR specific to the technology needed to get the work done quickly.

Question: in the course of due diligence and unique identity of the new TG you need to compare and contrast other solutions, so the SG would need to look into this – what is the perception of how the group would go about forming the PAR and 5C?

Answer: SGs provide a public forum for everyone who is interested in the work, and they can come along and comment. For example, this would enable .11s to come in and try and process what we're up to. It is probably worth ensuring that our slots in the agenda don't overlap with .11s.

Chair: the intent here is to further consult with other groups relevant to this activity. Has this been brought as a contribution to TGs?

Answer: not yet.

Comment: it's right that the original TGs PAR was meshed networks of APs only, but in the current draft we also have something known as a lightweight mesh point that can talk to anything in range. This is close to DLS.

Comment: need for this to be co-ordinated with .11s.

Question: in terms of presentations in WNG in July, we saw several presentations on problems with high rate video etc. Are there any commonalities in scope between what is proposed here, and what that group will do?

Answer: certainly one of our scenarios overlaps with that group. Our intent with this proposed group is that there is a market need to develop a solution over a short timescale. If we have a group with a wide scope, it will take a number of years to reach a conclusion. We want a very narrow scope to get the work done quickly.

Motion:

Move that the WNG SC recommends that the IEEE 802.11 WG form a Study Group to examine DLS operation with non-802.11e APs and to examine power saving extensions to DLS with the intent to create a PAR and 5 Criteria to form a new Task Group.

Proposed: Simon Barber

Second: Menzo Wentnik

No discussion.

Result: 35 - 1 - 11

Motion passes.

### **Traffic Aware: 11-06-0912r0, Zhang**

Discusses the benefits of traffic awareness in WLAN mesh networks, and proposes solutions to support this functionality. The motivation for this work is to provide enhanced load balancing across the network, and to support differential access to the medium based on the traffic type. This work has been simulated to illustrate performance.

Question: on slide 15: what is the packet id?

Answer: it is the number of the packet

Question: so this graph shows delay per packet?

Answer: yes

Question: slide 6: you are splitting voice and data, and video into vframes, pframes etc. All of these things can be parsed byte by byte looking at the start codes, but they are all different length, and there is no provision for re-assembly or doing re-tries. Data flows to the receiver needs to go to the application to be parsed, how are you conveying to the PHY that some need to be re-tried, and some don't, and how do you put them back into sequence.

Answer: this presentation gives some idea about our solution, we haven't developed a complete solution for our idea, we only have the simulation results, more study is needed about this.

Question: slide 12: why is the data modelled as CBR?

Answer: we only care about the video traffic, the other traffic is just modelled using a mathematical model.

Question: but why choose CBR for data?

Comment: is there a mistake on the slide? Should the first and last rows be swapped?

Answer: yes, there is a typo.

Chair: we have reached the end of the presentations, as far as I'm aware we have no other presentations queued. There is a WNG session in November, and I would encourage you to send your ideas and topics for presentation to me.

Chair: any final thoughts?

Chair: seen none. Move for WNG to adjourn

Second: Guido Hertz

No objections.

Meeting adjourned.