

**IEEE P802.11
Wireless LANs**

Approved Minutes of the IEEE P802.11 Full Working Group

Date: 2005-09-19

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Abstract

Minutes of the 802.11 full working group.

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Opening Plenary: September 19, 2005

1.1. Introduction

- 1.1.1. Meeting called to order by Stuart J. Kerry at 08:00.
- 1.1.2. This is the joint session of 802.11, 15,18,19,20, 21, and 22.
- 1.1.3. The agenda of the 93rd session of 802.11 is in doc: IEEE 11-05-814r1.
 - 1.1.3.1. .
- 1.1.4. Secretary – Tim Godfrey
- 1.1.5. Officers and Chairs of 802.11:

IEEE 802.11 WORKING GROUP OFFICERS			
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1.2. Approval of the Agenda

1.2.1. Stuart J. Kerry reviews the agenda for the group

1.2.1.1. There will be architecture sessions on Monday and Tuesday evenings. All members are encouraged to attend.

1.2.2. First time attending IEEE 802: 12

1.2.3. The joint agenda is approved by Unanimous consent.

1.3. Minutes for May 2005 joint meeting

1.3.1. Any matters from the minutes?

1.3.2. The minutes from Cairns are approved with Unanimous consent.

1.4. Antitrust statement.

1.4.1. Stuart J. Kerry reads the following statement to the body:

ANTI-TRUST STATEMENT

Each Member acknowledges that the Members are committed to fostering competition in the development of new products and services. The Members further acknowledge that they or their employers may compete with one another in various lines of business and that it is therefore imperative that they act in a manner which does not violate any applicable antitrust laws and regulations.

Without limiting the generality of the foregoing, the Members acknowledge that the Members will not, in meetings or informal gatherings associated therewith, discuss issues relating to product pricing, methods or channels of product distribution, any division of markets, or allocation of customers or any other topic which should not be discussed among competitors in the context of standards meetings or informal gatherings associated therewith.

Accordingly, each individual Member sponsor hereby assumes the responsibility to behave in an appropriate manner in this respect and to limit their discussions to subjects that relate to the purposes of the IEEE Standards making process and adhere to IEEE policies and procedures, whether or not such discussions take place during formal meetings or informal gatherings associated with IEEE standards meetings.

1.5. Rules

1.5.1. Stuart J. Kerry reminds the members of courtesy policies regarding cell phone use.

1.6. Treasurers Report

1.6.1. Al Petrick presents document 11-05-0xxxr0, on the joint 802.11/802.15 treasury.

1.6.1.1. July 2005 balance - \$101K

1.6.1.2. Left-over-funds from F2F and TourHosts added \$5K.

- 1.6.1.3. Had 506 early and 99 late registrations. Current registration is \$282K. Expenses are projected at \$282 or less. We should come out a bit ahead.

1.7. Review of Policies and Procedures

- 1.7.1. Al Petrick presents document 11-05-781r1 to the body.
- 1.7.2. Review of working group officers and duties for all wireless working groups. Members are encouraged to wear their voting tokens. Voting rights are also indicated by a printed indication on the badge.
- 1.7.3. Review of operating policies and procedures, registration, payment of fees. 802.11 P&P is in 11-05-456r0, which is posted on the web site. Roberts Rules are revision 10 (Gold Book)
- 1.7.4. Review of rules against photographs, tape recording, and media briefing.
- 1.7.5. Review of attendance recording process, and contact information updating procedures.
 - 1.7.5.1. For 802.11 members, we are following the special procedure for attendance. Members should sign in once per day between 8 and 5 at the registration desk. That sign in sheet is the only official means for auditing for voting rights. You must also check the sessions attended.
 - 1.7.5.2. The wireless architecture sessions are part of the set of available meetings for achieving 100%.
 - 1.7.5.3. The meeting planners will have the sign in sheets available till 17:00.
 - 1.7.5.4. Discussion on change to attendance. The change in attendance recording should have been notified in advance.
 - 1.7.5.5. A member plans to bring a motion to return the attendance recording to the way it was done the last 14 years. Will bring a motion on Wednesday.
 - 1.7.5.6. Bob Heile states that other Working groups will have attendance recording books, or task-group sign in sheets.
- 1.7.6. Review of voting rights and process for obtaining voting rights, and signing up for email and reflectors. The email confidentiality disclaimer was presented.
- 1.7.7. Review of process and requirements for gaining and keeping voting rights.
- 1.7.8. Membership representation and anti-trust laws are reviewed.
- 1.7.9. Al Petrick reads the following slide to the body:

July 2005

doc.: IEEE 802.11-05/0781r0

Inappropriate Topics for
IEEE WG Meetings

- Don't discuss licensing terms or conditions
- Don't discuss product pricing, territorial restrictions or market share
- Don't discuss ongoing litigation or threatened litigation
- Don't be silent if inappropriate topics are discussed... do formally object.

If you have questions,
contact the IEEE Patent Committee Administrator
at patcom@ieee.org

Approved by IEEE-SA Standards Board – December 2002

Submission

Slide 16

Stuart J. Kerry, Philips Semiconductors

1.7.10.

1.7.11.

AI Petrick reads the following text to the body regarding IEEE patent policy:

July 2005

doc.: IEEE 802.11-05/0781r0

IEEE-SA Standards Board Bylaws on Patents
in Standards

6. Patents

IEEE standards may include the known use of essential patents, and patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard. This assurance shall be provided without coercion and prior to approval of the standard (or reaffirmation when a patent becomes known after initial approval of the standard). This assurance shall be a letter that is in the form of either

- a) A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement the proposed IEEE standard against any person or entity using the patent(s) to comply with the standard or
- b) A statement that a license will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination

This assurance shall apply, at a minimum, from the date of the standard's approval to the date of the standard's withdrawal and is irrevocable during that period.

Approved by IEEE-SA Standards Board –, March 2003, May 2005

Submission

Slide 17

Stuart J. Kerry, Philips Semiconductors

1.7.12.

1.7.13.

Review of copyright status of submissions

1.7.14.

Review of meeting etiquette.

1.7.15.

Stuart J. Kerry asks if there are any questions about patent policy.

1.7.15.1. None.

1.8. IEEE SA Letters of Assurance

1.8.1. Bob Heile asks for any new LOAs

1.8.1.1. None from the floor.

1.9. Announcements

1.9.1. Verilan is providing our network support services.

1.9.2. Members are encouraged to load documents from the local server to prevent congestion of the Internet connection.

1.9.3. There are 393 people in the group.

1.10. 802 Wireless Architecture Sub-Committee

1.10.1. Tom Seip presents document xxx

1.10.2. Desires for this group to become a study group and produce a PAR and 5C. Could cover interoperation, heterogeneous media.

1.10.3. Question of standard or recommended practice?

1.10.4. There is strong interest in these topics in previous sessions.

1.10.5. Need coordination in handover, meshing, cellular convergence.

1.10.6. Will meet at 7pm Monday and Tuesday.

1.11. Meeting information

1.11.1. Meeting room locations and other attendee information is at the URL on the back of everyone's badges.

1.11.2. The Social event is at Speedzone Wednesday evening.

1.12. Interim Meetings

1.12.1. January 2006 – Hilton Waikoloa Village. Registration and Hotel links are available. Cutoff for IEEE rate is in November 1st.

1.12.2. May 14 – 19, 2006 will be at Hyatt Regency in Jacksonville, FL.

1.12.3. September 2006: Had been considering Prague. However an all-802 interim meeting in London is in planning in January 2007. Does the group want to have two international interims in a row? If January goes to Europe, we think that a venue in Asia would be preferable for September.

1.12.3.1. Discussion from the floor:

1.12.3.2. Is there a document that specifies the criteria for selecting a venue?

Members could help propose possible locations. There is no set document. The meeting planners are trained to do the searching, as part of their duties. The 802 officers just provide estimates of our expected attendance, and they work with the properties regarding space and costs.

1.12.3.3. The ideal criterion should be based on convenience. The US is very convenient for people not in the US. Would prefer Singapore over Sydney Australia for the reason of convenience.

1.12.3.4. Bob Heile notes that we will have two interims from the wireless groups per year, since 802 will organize one of them.

1.12.3.5.

1.13. Policies and Procedures Update

1.13.1. 802.11 is working from 05-456r0.

1.13.2. The CAC discussed the attendance credit for evening sessions. Will have motion on Wednesday.

1.14. Timelines

- 1.14.1. There were minor delays for 802.11p and 802.11k. Otherwise the schedule is unchanged.
- 1.14.2. Stuart J. Kerry notes that there are links from the timeline to the PAR and the Task Groups Updates. This timeline is the place we send the press.
- 1.14.3. The sponsor ballot group has closed for 802.11REV-ma.
- 1.14.4. Nanci notes that TGk will meet tomorrow AM regarding the public awareness effort kickoff.
- 1.14.5. If any members companies have donated equipment or services for Katrina relief, we would like to put together a press release.

1.15. Technical Editors Report

- 1.15.1. Simon Barber plans to coordinate with TG editors, and align their timelines.
- 1.15.2. Regarding ISO publication. 802.11g has been sent for publication. Comments will be sent to 802.11ma when received. 802.11i will be discussed in the JTC1-SC6 section.
- 1.15.3. Meeting is Tuesday AM at 7:00AM

1.16. Agenda

- 1.16.1. The 802.11 agenda is in 814r1.
- 1.16.2. The agenda is approved with Unanimous consent for 802.11

1.17. Approval of 802.11 Minutes from July 2005

- 1.17.1. Are there any matters arising from the minutes from July?
 - 1.17.1.1. None
- 1.17.2. The minutes are approved with Unanimous consent.

1.18. Task Group / SC reports

- 1.18.1. WNG – TK Tan.
 - 1.18.1.1. There are two sessions. There will be presentations on 802.1am, FMCA update, CSMA over MPR.
- 1.18.2. TGe is completed. It will be voted on today at RevCom.
- 1.18.3. TGm – Bob O'Hara
 - 1.18.3.1. The latest recirculation ballot closes today. Voters that voted No should review the resolutions and if they are satisfactory, to submit a ballot changing the vote to Yes. If not, please contact Bob O'Hara of the specific areas where there are problems. 05-482, 05-709 and 05-848 contain the resolutions
 - 1.18.3.2. There are no requests for ANA.
- 1.18.4. TGk – Richard Paine
 - 1.18.4.1. The agenda is in 886r2. There have been teleconferences, and an Ad Hoc was held in Seattle. Unresolved blank comments have been processed. At this meeting we will work on deferred comments. Expect to vote on Letter Ballot on Thursday.
 - 1.18.4.2. Starting a public awareness project on 802.11k.
- 1.18.5. TGn – Bruce Kraemer
 - 1.18.5.1. Working through the selection process. We have 3 proposals, which are working towards a single joint proposal. The status will be updated this week, but will not be available until November.

- 1.18.6. TGp – Lee Armstrong
 - 1.18.6.1. Have received comments on the draft that has been under review. Working to resolve comments and hope to issue LB this week.
- 1.18.7. TGr – Clint Chaplin
 - 1.18.7.1. Agenda 05-0920r1. Goal this week is to work on draft, planning for LB in November
- 1.18.8. TGs – Donald Eastlake
 - 1.18.8.1. There are now 6 proposals to present at this meeting. There will be balloting on Thursday, 05-597r10 is a summary. There will be 4 other presentations this week.
 - 1.18.8.2. Art Martin passed away recently. He was a contributor to IEEE and TGs. Stuart and the 802.11 body expressed condolences to his colleagues and family.
- 1.18.9. TGT – Charles Wright
 - 1.18.9.1. A draft 0.3 has been posted and discussed. There will be more technical proposals to go into the draft this week. The TG still needs a secretary.
- 1.18.10. TGu – Stephen McCann
 - 1.18.10.1. There is an extra session this afternoon 4-6pm. Agenda 890r1. Will review requirements, generate liaisons.
 - 1.18.10.2. 802.11 has received a liaison from 3GPP regarding E911 issues. We will have an informal discussion at Tuesday lunch to discuss which Task Group will deal with this issue. The document is 05-922r0.
- 1.18.11. TGv – Pat Calhoun
 - 1.18.11.1. Objectives in 796r1. Some objectives are not active requirements, and may be dropped. Will have CFP in November.
- 1.18.12. TGw – Jesse Walker
 - 1.18.12.1. TGw has 3 sessions this week. Will hear proposals this week. There are 5 intents to propose, but two have merged. There will be 4 presentations.
 - 1.18.12.2. JTC1 – there will be two ad-hoc sessions. Will address action items from ISO JTC1-SC6 meetings. Need to address issue of lack of registration authority for 8802-11. Need to establish IEEE 802.11 as the official registration authority. The ISO Secy General has cancelled the 802.11i fast-track ballots. Simultaneous fast-track ballots for 802.11i and WAPI have been started. Conflicts with other standards will be ignored, contrary to ISO JTC1 procedure. The JTC1 ad hoc will provide guidance for voters in the fast track.
- 1.18.13. CBP SG – Peter E
 - 1.18.13.1. Will meet twice this week. Goal is to review the FCC activities, and work on PAR and 5C for standard for 3650 band in accordance of FCC rules of May 11, 2005.

1.19. WG Voters Summary – Harry Worstell

- 1.19.1. We have 511 voting members in 802.11.
 - 1.19.1.1. Credit for recirculation ballots is contingent on a vote on the first ballot.
 - 1.19.1.2. The sign-in process is the only official way of recording your attendance this week. It is necessary to maintain 75% attendance of sessions this week.

1.20. 802.15 Reports

- 1.20.1. Voter Summary – 230 Active voters
- 1.20.2. TG3a – Greg Rasor
 - 1.20.2.1. Went through another round of down-selection. Will repeat the process this week.
- 1.20.3. TG3b – John Barr
 - 1.20.3.1. Completed sponsor ballot of TG3b. Had 97% approval.

- 1.20.3.2. There are 244 comments to review this week. Expect to conduct a recirculation and go to revcom in November.
- 1.20.4. TG3c – Reed Fisher
 - 1.20.4.1. Will work on creating selection criteria document and channel model.
- 1.20.5. TG4a – Pat Kinney
 - 1.20.5.1. Focus will be on modulation, and lower data rate CSS. Will address coexistence and regulatory issues. Will discuss MAC changes with TG4b.
- 1.20.6. TG4b – Rob Poor
 - 1.20.6.1. About 5 people will be participating this week. Need a secretary. Will work on preparing draft for recirculation in November.
- 1.20.7. TG5 – Neo Lee
 - 1.20.7.1. There are two baseline documents, for high and low rates. Will review and identify missing items. Will elect vice chair and editor.
- 1.20.8. SC WNG – Eric Shylander
 - 1.20.8.1. Will look at new technologies and possible standardization projects for PANs. Will have presentations. Objectives are in 15-05-0496.
- 1.21. 802.19**
 - 1.21.1. Steve Shellhammer presents doc 19-05-0033r0
 - 1.21.2. Review of July activities
 - 1.21.3. There is a list of projects on the 802.19 web sites of project requiring coexistence assurance statements.
 - 1.21.4. Will meet with 802.15.4a on their CA statement.
 - 1.21.5. Will have liaison with project P1900.2 on interference analysis.
 - 1.21.6. Will have presentation on analysis of PER due to interference.
- 1.22. 802.18**
 - 1.22.1. 802.18 is meeting with ITU in Geneva this week.
- 1.23. 802.20**
 - 1.23.1. Jerry Upton presents document 20-05-56
 - 1.23.2. Will work on evaluation criteria document and technology selection process.
 - 1.23.3. There are 82 voters in 802.20.
- 1.24. 802.21**
 - 1.24.1. Ajay Rajkumar presents document xxxx
 - 1.24.2. Server is 10.0.1.21 for documents submitted at this meeting.
 - 1.24.3. Working on handover and interoperability between 802 and non-802 networks. Have completed requirements, and an baseline draft was adopted in May 2005. Now in pre-letter ballot comment resolution phase.
 - 1.24.4. Accepting contributions for editorial changes or technical gaps in draft.
- 1.25. 802.22**
 - 1.25.1. Carl Stephenson presents document 22-05-0076-r3
 - 1.25.2. Calling for intent to propose by October 1.

- 1.25.3. Formed a Study Group on enhancing detection and avoiding licensed devices. Will create PAR and 5C to take to ExCom.
- 1.25.4. Discussion
 - 1.25.4.1. Oct 1 is for full proposals? No, just for intent to propose, either partial or full.

1.26. Announcements

- 1.26.1. Will a directory for wireless ad-hoc be created on the server?
 - 1.26.1.1. Yes, we will create a place for incoming. Details will be on breaking news URL on back of badge.

1.27. Recess

- 1.27.1. The joint plenary session is recessed at 09:45

2. Wednesday, September 21, 2005

2.1. Opening

- 2.1.1. The meeting is called to order at 10:30AM by Stuart J. Kerry.
- 2.1.2. There are 231 people in the room.

2.2. Review of the Agenda

- 2.2.1. Stuart J. Kerry reviews the r2 version of the agenda in document 05/814.
- 2.2.2. A new item 5.3 regarding attendance parameters has been added in R2.
- 2.2.3. No other modifications from the floor.
- 2.2.4. The agenda is approved with Unanimous consent.

2.3. Letters of Assurance

- 2.3.1. Members are aware of the policies, and there are no questions.
- 2.3.2. There are no new LOAs

2.4. Announcements

- 2.4.1. CAC meeting Thursday evening
- 2.4.2. Thefts have been reported in this hotel. Members are warned to be cautious of their property.
- 2.4.3. Chairs need to ring the AV office when they adjourn so the projectors can be retrieved.
- 2.4.4. The social tonight is as Speedzone. Buses will depart at 5:30 to 6:30

2.5. Attendance

- 2.5.1. Harry Worstell reminds members to sign in using the paper list across from the registration desk. Signing in is the only record of attendance. There will be no opportunities to sign in after the day of the meetings, in the 8 hour window.

2.6. Liaison Reports

- 2.6.1. 802.15
 - 2.6.1.1. Position open. No volunteers
- 2.6.2. 802.18
 - 2.6.2.1. Denis Kuahara – not present.
- 2.6.3. 802.19

- 2.6.3.1. Sheung Li – 802.19 has worked on Coex assurance statements for 802.15.4
- 2.6.4. **802.22**
 - 2.6.4.1. Peter E: We can access the 802.22 server, and there requirements and spreadsheets. They will complete them this week and issue a CFP. There was an ex-parte meeting with FCC OET to change the noise floor in the TV bands. There is no feedback from the FCC yet.
- 2.6.5. **802. Architecture**
 - 2.6.5.1. Andrew Myles: There was no 802 architecture group since this was not a plenary, but rather a wireless and 802.1 ad-hoc meeting led by Tom Seip. In November the Architecture group will meet on Sunday at 2:00pm.
 - 2.6.5.2. Tom Seip discusses the wireless architecture ad-hoc. The notes will be posted as 802.1 documents. The ad-hoc will meet again in November. There were approximately 400 people on Monday and 120 on Tuesday.
- 2.6.6. **WiFi Alliance**
 - 2.6.6.1. Clint Chaplin: New task group VoWiFi Technical group. Steven Palm has been elected as technical chair. There was a special meeting on TGn. WiFi alliance will not do certification before TGn is ratified. WiFi will start preliminary testing of technology such as MIMO beforehand.
- 2.6.7. **JEDEC JC61**
 - 2.6.7.1. Tim Wakelely. In August JEDEC approved version 1.1 adding an optional clock line. Next meeting will be in Vancouver.
- 2.6.8. **IETF**
 - 2.6.8.1. Dorothy Stanley presents document 05/993r0. There is an RFC regarding 802.11u requirements.
 - 2.6.8.2. There have been updates to EAP keying and EAP key management extensions. This work will need to align with TGr. There are two new EAP methods in the RFC queue.
 - 2.6.8.3. CAPWAP has generated an evaluation team document.
 - 2.6.8.4. There is a document on Radius extensions available for comment.
 - 2.6.8.5. There will be a meeting in Vancouver preceding the 802 plenary in November.
- 2.6.9. **JTC1-SC6**
 - 2.6.9.1. Alex: There have been two meetings since July. Action by this body is required. Presentation of Document 970r2
 - 2.6.9.2. Move that the IEEE 802.11 Working Group approve the liaison document 11-05-0953-02-0jtc-IEEE-802-11-Liaison-Letter.doc and request that Stuart Kerry, Chair IEEE 802.11 forward the letter to Lisa Rajchel, ISO/JTC1 Secretariat. This letter conveys a request to ISO/IEC JTC1 from the IEEE 802.11 Working Group to ask JTC1 to officially designate the IEEE 802.11 WG as the ISO/IEC IS 8802-11 Registration Authority.
 - 2.6.9.2.1. Moved. Alex Cheng
 - 2.6.9.2.2. Second Jesse Walker
 - 2.6.9.2.3. The question is called with Unanimous consent
 - 2.6.9.2.4. Vote: Passes 93 : 0 : 6
 - 2.6.9.3. Jesse Walker notes that the ad-hoc group adopted a position paper on the WAPI/802.11i dispute. We are still making editorial comments. It will be posted today as 05/967. The Ad Hoc requests the 802.11 WG to vote on this on Friday.
- 2.6.10. **3GPP**
 - 2.6.10.1. Sabine Demel presents document 05/991r0. Task Group U is working on a liaison statement with 3GPP in document 05/972r0. It asks for 3GPP opinion on the TGu requirements.
 - 2.6.10.2. 3GPP has sent a liaison letter to 802.11 regarding the handling of emergency calls – document 05/922.

- 2.6.10.3. There has been a reply drafted as 05/988r0. It will be discussed in 802.11k, 11u and 11v, and will be brought for approval on Friday.
- 2.6.11. TIA
 - 2.6.11.1. Ariel Sharon presents document 05/645. TIA represents telecommunication industry and users. They do standards development also. Committee TR8 deals with mobile and personal private radio standards. TR42 is wired telephony and infrastructure. There is a new group TR47 that just formed to deal with MAC and PHY issues.
 - 2.6.11.2. Subcommittee TR8.8 deals with broadband data systems. Addressing spectrum in 4.9Ghz band for public safety. Will be balloting PHY and MAC soon.
 - 2.6.11.3. Steve Whitesell, chair of TR41 states that work on VoIP is underway in his group.
- 2.6.12. TIA TR42 liaison letter
 - 2.6.12.1. Not ready currently – defer until Friday closing plenary
- 2.6.13. 3GPP2
 - 2.6.13.1. There has been no liaison – the first letter is at this meeting, regarding TGu interworking. Will ask for feedback on requirements.

2.7. **New Business**

2.7.1. TGu Liaison Activities and plans

- 2.7.1.1. Stephen McCann presents document 05/961r2.
- 2.7.1.2. TGu has completed a requirements document. Since it is dealing with external networks, so cooperation with the organizations that standardize those networks is needed.
- 2.7.1.3. Document 05/882r3 is the summary of TGu requirements. This document will be sent to other groups, requesting comments and review.
- 2.7.1.4. Document 05/960r1 contains generic text for a liaison request. We will have a single motion to enable sending letters to the list of external bodies.
- 2.7.1.5. Motion: Move that IEEE 802.11 Working Group approve document 11-05-0960r1, as a generic liaison letter, asking for review comments about the IEEE 802.11u requirements document (11-05-822r3), and request the working group chair to use it to generate liaison letters to the following organizations:
 - 3GPP
 - 3GPP2
 - IETF
 - FMCA
 - Wi-Fi Alliance
 - IRAP
 - GSMA
 - IEEE 802.1
 - IEEE 802.16
 - IEEE 802.21
 - WiMAX Forum
- 2.7.1.6. Moved: Stephen McCann on behalf of TGu
- 2.7.1.7. Discussion
 - 2.7.1.7.1. This motion doesn't give authority to send letter to these organizations.
 - 2.7.1.7.2. Amendment accepted without objection
- 2.7.1.8. Motion as amended: Move that IEEE 802.11 Working Group approve document 11-05-0960r1, as a generic liaison letter, asking for review comments about the IEEE 802.11u requirements document (11-05-822r3), and request the working group chair to use it to generate liaison letters and send them to the following organizations:
 - 3GPP

3GPP2
IETF
FMCA
Wi-Fi Alliance
IRAP
GSMA
IEEE 802.1
IEEE 802.16
IEEE 802.21
WiMAX Forum

2.7.1.9. Vote: Passes 95 : 0 : 7

2.7.2. Joint 802.11 and 802.1 liaison activities and plans

2.7.2.1. Donald Eastlake presents document 05/989r0 on 802.1aq shortest path bridging.

2.7.2.2. The current status of 802.11s is reflected in 05/587r11. TGs is in the process of down-selection.

2.7.2.3. Review of current TGs terms, concepts, and diagrams in document 04/1477r4.

2.7.2.4. Steve Connor gives an overview of minimum functional requirements for 802.11s from document 04/1174r13.

2.7.2.5. Discussion

2.7.2.5.1. How are connections modeled? In a mesh, you have pre-established a set of point to point connections, then calculate best paths over those connections. Was there much discussion of an alternative model where you optimize over bandwidth at a given frequency? Optimize for the shared resource – frequency. Yes – these functional requirements do not capture that level of detail. There are many proposal being discussed that encompass these areas.

2.7.2.6. Donald Eastlake presents his thoughts on the interaction between 802.11s and 802.1aq. 802.1aq has started later, but is inherently simpler – no need for QoS or Security. 1aq may proceed faster. 1aq is based on VLAN IDs, for which there is no parallel in 802.11. The 11s PAR requires that it supports alternative framing, so theoretically 1aq could be supported as one of many frame forwarding decisions.

2.7.2.7. Tony Jeffree, Chair 802.1, addresses the group. 802.1 is concerned about how the 802.11s activity could affect 802.1 bridging. There is no explicit statement in 802.11s requirements that the result must coexist with 802.1 bridged environments. Donald states that there are requirements in the PAR for 802.1d. An 802.11s mesh appears like a single Ethernet segment.

2.7.2.8. Tony is concerned that 11s results in a LAN that is constantly re-configuring itself. It may be possible to construct a loop due to a reconfiguration.

2.7.2.9. Donald notes that the connectivity changes much faster than wired LANs change configuration. Notes that the requirements are minimum. Proposals can and do go beyond. The PAR is still the final authority, and requires compatibility with bridging.

2.7.2.10. Comment from the floor – agrees that 802.11s should be VLAN independent and organize underneath. There were some scenarios in 802.17 where they felt that was not enough. There are cases where bridges observe source address, and certain locations will never be heard by the bridge.

2.7.2.11. From the floor: believes it is worth working with 802.1 on this. However, 802.1 does not have a concept of radio-based links. Tony states that bridging does take into account the path costs, which could somewhat accommodate radio link characteristics.

2.7.2.12. From the floor: Since this is an open ended discussion, could we move on to the next agenda item.

- 2.7.2.13. From the floor: If the problem is framed as point to point links that are radio aware, then 802.1 can deal with it. Resource-centric might be more difficult for 802.1.
- 2.7.2.14. Tony states that 802.1ab has discovery mechanisms, suggests that 802.11s have a look at that.
- 2.7.2.15. Update on 802.1am: Tony states that 802.1 discussed the 802.1am PAR and made some changes to the text. There is further work to be done. Will have further session in November, with input from the wireless WGs. Will not resubmit in November at the current time.
- 2.7.2.16. Stuart J. Kerry suggests a liaison between 802.1 and 802.11s, to be coordinated between Tony Jefree and Donald Eastlake, on behalf of 802.11.

2.7.3. Attendance Parameters

- 2.7.3.1. Following up on Monday's discussion on attendance and the evening sessions. Stuart J. Kerry reviews the meeting graphic and the Policies and Procedures, which state that 75% attendance is based on morning and afternoon sessions, and evening sessions can be substituted.
- 2.7.3.2. Stuart J. Kerry shows that the red line on the graphic have been changed to enclose only the daytime hours, used for 75% calculating. The Blue line shows the evening as extra credit.
- 2.7.3.3. Dave Bagby states that since Stuart has reversed what he said on Monday, therefore this motion is not needed.
- 2.7.3.4. Stuart J. Kerry says it is not a reversal, but a lack of clarification. Stuart notes that the policy of evenings being extra credit is retroactive to Monday of this week.
- 2.7.3.5. Dave says there is no need for the motion and withdraws it.
- 2.7.3.6. Stuart J. Kerry states that the graphic will continue to show the primary and extra credit slots.

2.8. **Announcement**

2.8.1. Letter Ballot 77 results

- 2.8.1.1. There were 414 Yes, 15 No, 19 Abstain. 96.5% approve, 3.5% no. Return ratio 82.1%

2.8.2. Discussion from the floor

- 2.8.2.1. A member wants to have working sessions in the evening.
- 2.8.2.2. Stuart J. Kerry states that this is an edict from the 802 chair. The WG has objected. However, we will have ad-hoc session on Monday. For evenings we will request again, but we cannot have sessions without the support of Paul Nicolich, 802 chair.

2.9. **Recess at 12:30pm**

3. **Friday, September 23, 2005**

3.1. **Opening**

- 3.1.1. The meeting is called to order at 08:00 by Stuart J. Kerry.
- 3.1.2. There are 126 people in the room
- 3.1.3. The courtesy notice and meeting rules are reviewed.
- 3.1.4. Any changes to the agenda?
 - 3.1.4.1. Need to add a report from the 802.15 WNG activity. Will add to the 11 WNG report.
- 3.1.5. The agenda is approved with Unanimous consent.

3.2. **Letters of Assurance**

- 3.2.1. There are no now LOAs

3.2.2. The members are all aware of the patent policy, and there are no questions.

3.3. **Announcements**

3.3.1. CAC members are advised to review the dates for teleconferences.

3.3.2. 802.11e was approved yesterday by the standards board. Stuart J. Kerry thanks John Fakatselis, Srini Kandala, Dunkin Kitchin and all the members who helped. The TGe working group and reflector will be closed.

3.3.3. During the month of October, Stuart J. Kerry will be taking a personal vacation. Al Petrick and Harry Worstell will take over in their normal roles. They will jointly represent the position of the working group.

3.3.4. WG Chairs are requested to provide meeting slot time requests, group size, and other group conflicts to avoid, to the CAC reflector. Al Petrick will be responsible for the agenda and meeting time slot coordination.

3.3.5. The CAC discussed the issue of the manual attendance procedure. The consensus view was that sign-in was mandatory. Members are responsible, and there is no back-dating. This will be the policy of the WG.

3.4. **Documentation**

3.4.1. Harry Worstell has a plan for handling the document numbers that were assigned in the 1600 range early this year. He will adjust the issued numbers to prevent duplicates.

3.5. **Policies and Procedures**

3.5.1. Al Petrick states that the current P&P is 05/456r0. There are no updates at this time.

3.6. **Reports**

3.6.1. **Publicity**

3.6.1.1. Nanci Vogtli states that the level of input regarding Katrina response was too low to be appropriate to have a general press release. There will be a public awareness campaign for TGk. It will be available starting in November. There were minor changes to the [timeline](#) for TGp and TGT. It is on the website main page. The Timeline now has an HTML link to the meeting dates, for WG, 802, and IEEE SA board meetings.

3.6.2. **Editors update – Simon Barber**

3.6.2.1. Document 804r1. The purpose was to align TG editing plans to the 802.11 official timeline. These are the editors of 802.11:

- 3.6.2.1.1. TGk – Simon Barber - simon@devicescape.com
- 3.6.2.1.2. TGm – Terry Cole - terry.cole@amd.com
- 3.6.2.1.3. TGn – not yet selected
- 3.6.2.1.4. TGp – Wayne Fisher - wfisher@arinc.com
- 3.6.2.1.5. TGr – Bill Marshall - wtm@research.att.com
- 3.6.2.1.6. TGs – Steven Conner – w.steven.conner@intel.com
- 3.6.2.1.7. TGT – Tom Alexander - tom@veriwave.com
- 3.6.2.1.8. TGu – Mike Moreton – mike.moreton@st.com
- 3.6.2.1.9. TGv – Emily Qi – emily.h.qi@intel.com
- 3.6.2.1.10. TGw – Jon Edney – jon.edney@intalk2k.com

3.6.2.2. The group discussed the baselines for drafts, which must be text that has been approved. Now it is possible to reference 802.11e.

3.6.2.3. We expect publication of 802.11e in the next 30 days. A special edition CD is available for purchase with all 802 standards (but not 802.11e).

- 3.6.2.4. ISO is working on publication of 802.11 2003 edition. 802.11i is still in balloting process.
- 3.6.2.5. Discussion
 - 3.6.2.5.1. Will the CD be available for free to members at the 802 meeting in November? No, it is a separate product. The November CD will only include published documents of 802.
 - 3.6.2.5.2. Will there be a report regarding 802.11j internationalization? There is no current plan to take it to ISO.
- 3.6.3. **Stuart J. Kerry conducts a Straw Poll regarding meeting location:**
 - 3.6.3.1. 100 liked the location, 4 didn't like, 7 don't care.
- 3.6.4. **WNG – TK Tan**
 - 3.6.4.1. Had presentation on 802.11am PAR, the FMCA organization, and the CSMA over MPR, and 802.11 for video transmission.
 - 3.6.4.2. In November will have additional presentations on video transmission, and CFP discussions.
 - 3.6.4.3. Eric Schylander presents the status of WNG for 802.15. There have been contributions Active RFID networks. Report will be uploaded as an 802.11 document area, and announced on the reflector.
- 3.6.5. **TGk – Richard Paine**
 - 3.6.5.1. Closing report in 05/1015r0
 - 3.6.5.2. Completed comment resolutions, and approved draft for letter ballot. During comment resolution, the hidden station and medium sensing histogram were eliminated. There will be mailings providing a document that is an overview of 802.11k (05/691r5). There is also a 1 page vision document that will be provided 05/996r1.
 - 3.6.5.3. 500 comments have been processed and resolved.
 - 3.6.5.4. In November, comment resolution will begin, and hopefully have recirc ballot on January.
 - 3.6.5.5. Teleconferences will be held between now and November, starting Sept 29th..
- 3.6.6. **TGm – Bob O'Hara**
 - 3.6.6.1. Report in 05/924r0.
 - 3.6.6.2. 802.11e was approved by the standards board, which impacts the 802.11REV-ma document. 802.11e must be incorporated into 802.11REV-ma before approval. In parallel with the sponsor ballot of the 802.11REV-ma.
 - 3.6.6.3. This process is imposed by the operating rules that IEEE runs. This will delay the balloting of 802.11REV-ma.
 - 3.6.6.4. TGm approved the comments and resolutions of the latest recirculation ballot LB77. These resolutions are in document 1012r0.
 - 3.6.6.5. Document 05/926 provides the documentation of meeting the requirements of conditional approval sponsor ballot, which was approved in 802.11m. It will be forwarded to ExCom.
 - 3.6.6.6. Approved the initiation of sponsor ballot.
 - 3.6.6.7. There are no official requests for ANA assignments to date. TGp will have a motion later today.
- 3.6.7. **TGn – Bruce Kraemer**
 - 3.6.7.1. Report in document 05/939r0
 - 3.6.7.2. The joint proposal group gave a status report on their process of creating a single proposal. The process will be repeated in November.
 - 3.6.7.3. The group consensus is that the group is moving in the right direction. Plans for November are based on a nearly complete joint proposal coming in beforehand. Plan to conduct a confirmation vote, and if successful, election of an editor.
- 3.6.8. **TGp – Lee Armstrong**

- 3.6.8.1. Report in 05/1016r0
- 3.6.8.2. Resolved comments this week, and addressed 74 comments on draft 0.23. There are still 33 remaining.
- 3.6.8.3. Next draft will be available on October 14th, and open for comments until November 4th.
- 3.6.8.4. Expect to issue first LB in November.
- 3.6.9. TGr – Clint Chaplin
 - 3.6.9.1. Report in 05/1008r0
 - 3.6.9.2. Had numerous presentations, will continue teleconferences.
 - 3.6.9.3. There were 4 intermediate drafts, the most current is 0.9, which will have a 15 day internal review, closing Oct 8th.
 - 3.6.9.4. In November, will have first LB.
- 3.6.10. TGs – Donald Eastlake
 - 3.6.10.1. Report in 05/1014r0
 - 3.6.10.2. There will be one teleconference
 - 3.6.10.3. Goals in November are to continue proposal presentations and downselect voting.
 - 3.6.10.4. There were 6 proposals coming into this meeting, and the vote this meeting eliminated 2.
 - 3.6.10.5. Stuart J. Kerry announces the ballot results

Rank	Proposal	Yes	No	Abs	Yes Ratio
1	G SEE Mesh	84	17	3	82.84%
2	B Wi-Mesh Alliance (WiMA)	49	34	21	58.93%
3	H Mesh Networks Alliance	29	53	22	35.54%
4	J Proactive Mesh	24	62	18	28.16%
5	M Common Control Channel	13	75	16	15.17%
6	A Mesh DCF	8	67	29	11.18%

3.6.10.5.1. The M and A proposals were removed.

- 3.6.11. TGT – Charles Wright
 - 3.6.11.1. Report in document 938r0
 - 3.6.11.2. Developed TGT process document for how a draft will be composed. One proposal was accepted into the draft.
 - 3.6.11.3. A draft 0.4 will be produced in about 3 weeks.
 - 3.6.11.4. Timeline update – now expecting first letter ballot after July 2006 meeting.
 - 3.6.11.5. Will have 3 teleconferences between now and November.
- 3.6.12. TGu – Stephen McCann
 - 3.6.12.1. Report in 05/1017r0
 - 3.6.12.2. Formally adopted requirements in 05/822r3
 - 3.6.12.3. Generated liaison letters to other organizations.
 - 3.6.12.4. Had pre-proposal presentations.
 - 3.6.12.5. There will be no teleconferences.
 - 3.6.12.6. There will be joint teleconferences with 802.21, announced on the reflector.
 - 3.6.12.7. Members are cautioned to observe daylight savings time differences between countries at the end of October
- 3.6.13. TGv – Pat Calhoun
 - 3.6.13.1. Report in document 05/0914r3

- 3.6.13.2. Goals were to finish objectives specification, and call for substantive text at next session. There is a selection process that was voted in.
- 3.6.13.3. The Call for Text was this week. An intent to submit is due by the 14th of October. In November, there will be motions to accept text into the draft.
- 3.6.13.4. Presenters who have text accepted will have to work together to create a draft.
- 3.6.13.5. Internal review expected to start in November 2006
- 3.6.13.6. Work list is in 05/796r3.
- 3.6.13.7. Objectives are in 05/827r3
- 3.6.13.8. In November will address load balancing, rate control, and SNMP.
- 3.6.14. **TGw – Jesse Walker**
 - 3.6.14.1. Report in 05/1019r0
 - 3.6.14.2. Heard 5 proposals this week.
 - 3.6.14.3. In November, will hear proposals.
- 3.6.15. **JTC1 – Jesse Walker**
 - 3.6.15.1. Report in 05/1018r0
 - 3.6.15.2. Addressed issues regarding 802.11i ISO fast-track ballot. Passed motions to affirm 802.11 as registration authority
 - 3.6.15.3. Doc 05/967 expresses the position of 802.11 on the WAPI controversy.
- 3.6.16. **CBP-SG – Peter Ecclesine**
 - 3.6.16.1. Report in 05/919r1
 - 3.6.16.2. Worked on changing PAR dates.
 - 3.6.16.3. Passed a motion to submit PAR and 5C in November
 - 3.6.16.4. 05/565r2 is the PAR – dates were changed to give 2 years after this November. Item 17 was changed regarding other documents with similar scope. This was clarified and expanded to differentiate this activity. Currently 802.16 does not directly compete.
 - 3.6.16.5. 05/351r4 is the 5 criteria, which is unchanged.
 - 3.6.16.6. Discussion
 - 3.6.16.6.1. Question on clause 18 of the PAR. Could it use the joint development procedure from ISO 8802-1 2001? This is could be added to the additional notes at the end. Will insert into motion.

3.7. **Old Business**

- 3.7.1. TIA TR-42 letter of acknowledgement
 - 3.7.1.1. Documents were sent to 802.11 in July and distributed. Our plan is to review in November. We will draft a letter to follow up.
 - 3.7.1.2. Move to direct the IEEE 802.11 WG chair to draft and forward a letter to the chair of TIA TR-42 acknowledging that the 802.11 WG received and distributed documents TR42-05-121b and TR42-05-125 to the 802.11 WG during the July 2005 plenary session for review and comment. The 802.11WG will respond back with comments to TR-42 working group following the close of the November 2005 plenary session. The letter of acknowledgment will be forwarded to the TIA TR-42 chair no later than September 29, 2005.
 - 3.7.1.2.1. Moved Al Petrick
 - 3.7.1.2.2. Second Ariel Sharon
 - 3.7.1.2.3. Vote: The motion is approved with Unanimous consent.
 - 3.7.1.3. Stuart J. Kerry directs that Al Petrick drafts and forwards the letter on behalf of the WG Chair.
- 3.7.2. TGk Motions
 - 3.7.2.1. Move to authorize a 40-day Working Group Letter Ballot of 802.11 TGk, draft 3.0 to conclude no later than 11/12/2005, asking the question “Should the 802.11k draft 3.0 be forwarded to sponsor ballot?”

3.7.2.1.1. Moved Richard Paine on behalf of TGk

3.7.2.1.2. Vote: Motion passes 82 : 0 : 4

3.7.3. TGm Motions

3.7.3.1. Moved on behalf of TGm: To approve the resolutions to the comments received on LB77 as they are shown in document 05/1012r0.

3.7.3.1.1. Moved Bob O'Hara on behalf of TGm

3.7.3.1.2. Vote: approved by Unanimous consent

3.7.3.2. Moved on behalf of TGm: To approve document 05/926r0 (PDF file) as the report to the 802 Executive Committee (EC) on the requirements for conditional approval to forward 802.11REV-ma to sponsor ballot, requesting the chair of 802.11 to forward this report to the EC on behalf of the working group.

3.7.3.2.1. Moved Bob O'Hara on behalf of TGm

3.7.3.2.2. Vote: motion passes 77 : 0 : 2

3.7.3.3. Moved on behalf of TGm: to request the chair of 802.11 to begin the sponsor ballot, using draft 4.0 of 802.11REV-ma, after all requirements for conditional approval as set forth in the 802 Policies and Procedures have been met.

3.7.3.3.1. Moved Bob O'Hara on behalf of TGm

3.7.3.3.2. Vote: motion passes 75 : 1 : 5

3.7.4. CBP SG Motions

3.7.4.1. Move: to send 11-05/0565r3 draft PAR and 11-05/0351r4 Five Criteria draft to 802 Excom, and hold a 802.11 WG re-confirmation vote on Monday of the November 2005 Plenary

3.7.4.1.1. Moved Peter Ecclesine

3.7.4.1.2. Second Jesse Walker

3.7.4.1.3. Discussion

3.7.4.1.3.1. Item 18 was added. The project intends to use the joint development process defined in ISO/IEC TR8802-1:2001 to achieve international standardization.

3.7.4.1.3.2. If this sentence had not been added, what would have been done? In ExCom on Friday in November, it could have been added.

3.7.4.1.3.3. How would internationalization have been achieved? Jesse Walker states that our standard would have been forwarded to the UK delegation to be submitted. This method automatically makes it an international standard.

3.7.4.1.4. Vote: passes 66 : 0 : 11

3.7.4.2. This item must be placed on the ExCom agenda by October 12th. Al Petrick will do this. It will be reconfirmed in the Monday opening plenary of 802.11 in November.

3.7.5. TGu Motions

3.7.5.1. Move that IEEE 802.11 Working Group approve document 11-05-0988r2, as a liaison letter and request the IEEE 802.11 Working Group chair to send it to 3GPP SA2. This liaison letter responds to their request for information about "Location information for WLAN terminals to handle IMS Emergency Calls".

3.7.5.1.1. Moved Stephen McCann

3.7.5.1.2. Second Al Petrick

3.7.5.1.3. Discussion

3.7.5.1.3.1. The slide title is changed from EMS to IMS

3.7.5.1.4. Vote: Approved with Unanimous consent

3.7.6. JTC1 Motions

3.7.6.1. Propose the IEEE 802.11 WG to accept document 11-05-0967r4 as descriptive of its position.

3.7.6.1.1. Moved Jesse Walker

3.7.6.1.2. Second Clint Chaplin

- 3.7.6.1.3. Discussion
- 3.7.6.1.3.1. All of our efforts for harmonization with WAPI have been rebuffed. We cannot ignore this.
- 3.7.6.1.4. Vote: The motion is approved with Unanimous consent

3.8. New Business

- 3.8.1. None

3.9. Adjourn

- 3.9.1. The meeting is adjourned at 9:45AM
- 3.9.2. Next meeting November 13th to 18th in Vancouver, BC, Canada
- 3.9.3. Final Notes
 - 3.9.3.1. Tutorial evenings are set aside and cannot be used for 802.11 sessions. There will be 802.11 ad-hoc sessions on Monday morning.
 - 3.9.3.2. The March meeting has not been officially relocated. The new Hyatt in Denver is under consideration, but moved up one week.

Abbott	William
Aboul-Magd	Osama
Abraham	Santosh
Adachi	Tomoko
Agarwal	Puneet
Agre	Jonathan
Aldana	Carlos
Alexander	Thomas
Alvin	Richard
Amann	Keith
Andrade	Merwyn
Andrus	David
Aoki	Tsuguhide
Aramaki	Takashi
Ariyavisitakul	Sirikiat Lek
Armstrong	Lee
Arnett	Larry
Asai	Yusuke
Aso	Keigo
Astrin	Arthur
Audeh	Malik
Bagby	David
Bahr	Michael
Baker	Dennis
Bangolae	Sangeetha
Bao	feng
Barber	Simon
Bari	Farooq
Basson	Gal
Batra	Anuj
Baysal	Burak
Benko	John
Benveniste	Mathilde
Berkema	Alan
Berry	Don
Bhandaru	Nehru
Bjerke	Bjorn
Black	Simon
Calhoun	Pat
Cam-Winget	Nancy
Canpolat	Necati
Carney	Bill
Cash	Broady
Chaplin	Clint

Chari	Amalavoyal
CHEN	CHIEN-HUNG
Chen	Jeng-Hong
Chen	Yi-Ming
Cheng	Alexander
Cheng	Hong
Cho	Jaeweon
Choudhury	Abhijit
Chu	Liwen
Chung	Simon
Ciotti	Frank
Conner	W. Steven
Cook	Charles
Cooklev	Todor
Crowley	Steven
Das	Subir
Davari	Shahram
De Vegt	Rolf
Demel	Sabine
Dickey	Susan
Doi	Yoshiharu
Dorsey	John
Douglas	Brett
DuMas	Phillip
Durand	Chris
Durand	Roger
Dure	Sebastien
Eastlake	Donald
Ecclesine	Peter
Eckard	Richard
Edney	Jonathan
Einhaus	Michael
Elbakoury	Hesham
Emeott	Stephen
Emmelmann	Marc
Engwer	Darwin
Epstein	Joseph
Epstein	Leonid
Ergen	Mustafa
Eroz	Mustafa
Faccin	Stefano
Falk	Lars
Fedyk	Donald
Feinberg	Paul

Fischer	Matthew
Fisher	Wayne
Foegelle	Michael
Ford	Brian
Fremont	Benoit
Gifford	Ian
Godfrey	Tim
Goel	Sandesh
Golden	Stuart
Gong	Michelle
Grandhi	Sudheer
Gray	Gordon
Gray	Paul
Green	Evan
Green	Larry
Gurevich	David
Haisch	Fred
Hares	Susan
Hart	Brian
Hartman	Chris
Haslestad	Thomas
Hattig	Myron
Hauser	James
Hayase	Shigenori
Hayes	Kevin
Hedberg	David
Henderson	Gregory (Scott)
Hermodsson	Frans
Heubaum	Karl
Hiertz	Guido
Hillman	Garth
Hinsz	Christopher
Hirano	Jun
Hoghooghi	Michael
Honary	Hooman
Hu	Wendong
Hunter	David
Hwang	Hyo sun
Ikram	Muhammad
Inoue	Yasuhiko
Ishida	Kazuhito
Ishidoshiro	Takashi
Ishii	Yoshiyuki
Iyer	Lakshmi

Jacobsen	Eric
Jauh	Yuh-Ren
Jetcheva	Jorjeta
Ji	Lusheng
Johnson	Todd
Jokela	Jari
Jones	VK
Joshi	Avinash
Kado	Youiti
Kain	Carl
Kakani	Naveen
Kangude	Shantanu
Karaoguz	Jeyhan
Kasher	Assaf
Kato	Masato
Kavner	Douglas
Kerry	Stuart
Ketchum	John
Khieu	Andrew
Kikuma	Tomohiro
kim	dongho
Kim	Jae Hyon
KIM	Jaeyoel
Kim	JinKyeong (Joseph)
Kim	Joonsuk
Kim	Kyeongsoo
Kim	Min-Soo
Kim	Tae-eun
Kim	Youngsoo
Kimhi	Ziv
Kleindl	Guenter
Kneckt	Jarkko
Kobayashi	Kiyotaka
Kobayashi	Mark
Koga	Keiichiro
Kolze	Thomas
Kose	Cenk
Kraemer	Bruce
Krishnan	Gopal
Kruys	Jan
Kunihiro	Takushi
Kuratani	Yasutaka
Kurihara	Thomas
Kvarnstrom	Bo

Kwak	Joe
Landt	Jeremy
Lee	Dongjun
Lee	Insun
Lee	Jihoon
Lee	Myung
Lee	Sok-kyu
Lee	Sung-Won
Lefkowitz	Martin
Levy	Joseph
Li	Yuan
Lin	Huashih
Liu	Hang
Liu	Jason
Liu	Yong
Livshitz	Michael
Loc	Peter
Lojko	Peter
Madhavan Pillai	Krishna Sankar
Mani	Mahalingam
Mano	Hiroshi
Mantri	Vijay
Marshall	William
Maruyama	Naotaka
Matache	Adina
MATSUMOTO	TOMOYUKI
Matsuo	Ryoko
Matsuo	Ryoko
Maufer	Thomas
McCann	Stephen
McClellan	Kelly
McFarland	William
McNamara	Darren
McNew	Justin
Medvedev	Irina
Mehta	Pratik
Merrill	Mark
Meyer	Klaus
Meylan	Arnaud
Miller	Robert
Min	Seungwook
Molisch	Andreas
Montemurro	Michael
Moreton	Mike

MORIOKA	Hitoshi
Morioka	Yuichi
Muck	Markus
Mujtaba	Syed
Murali	Partha
Myles	Andrew
Nagai	Yukimasa
Nakache	Yves-Paul
Nakamura	Tetsuya
Nakao	Seigo
Nakase	Hiroyuki
Nanda	Sanjiv
Narasimhan	Partha
Narkadamilli	Purushothamarao
Ngo	Chiu
Niu	Huaning
Noble	Erwin
Noens	Richard
Ogawa	Masakatsu
Oguma	Hiroshi
O'Hara	Bob
Ojard	Eric
Olson	Timothy
OVADIA	SHLOMO
Ozer	Sebnem
Paine	Richard
Palm	Stephen
Panish	Paul
Perahia	Eldad
Perillo	Mark
Petranovich	James
Petrick	Al
Pirzada	Fahd
Pitarresi	Joe
Pollock	Tony
Poojary	Neeraj
Ptasinski	Henry
Qi	Emily
Qian	Luke
Raab	Jim
Rahman	Shah
Raissinia	Ali
Ramesh	Sridhar
Rayment	Stephen

Reddy	Joseph
Rios	Carlos
Rosdahl	Jon
Roy	Richard
Rude	Michael
Rudolf	Marian
Sadeghi	Bahareh
Sadot	Emek
Saleem	Syed
Sarrigeorgidis	Konstantinos
Sashihara	Toshiyuki
Sastry	Ambatipudi
SATAPATI	SURESH
Saxena	Monica
Schylander	Erik
Sensendorf	Joe
Shao	Huai-Rong
Sharma	Neeraj
Sharon	Ariel
Shen	BZ (Bazhong)
Sherlock	Ian
SHIRALI	KEDAR
Shvodian	William
Siep	Thomas
Simpson	Floyd
Singh	Balraj
Siti	Massimiliano
Skafidas	Efstratios (Stan)
Smith	Matt
Sood	Kapil
Soomro	Amjad
Soranno	Robert
Stanley	Dorothy
Stephens	Adrian
Stevens	Fabrice
Stibor	Lothar
Stolpman	Victor
Strutt	Guenael
Sugawara	Tsutomu
Surineni	Shravan
Suzuki	Hideyuki
Takagi	Eiji
Takagi	Masahiro
Takahashi	Seiichiro

Takai	Mineo
Takeda	Daisuke
Tan	Teik-Kheong
Tanaka	Yasuhiro
Tao	Jeffrey
Taori	Rakesh
tavares	clifford
Thrasher	Jerry
Tokubo	Eric
Tolpin	Alexander
Towell	Timothy
Trainin	Solomon
Trecker	Christopher
Tsien	Chih
Tsoulogiannis	Tom
Tung	David
Turner	Sandra
Tzamaloukas	Mike
Van Nee	Richard
van Waes	Nico
van Zelst	Allert
Varas	Fabian
Victor	Dalton
Vlantis	George
Wakeley	Tim
Walker	Jesse
Wallace	Brad
Wandile	Vivek
Wang	Huaiyuan
Ward	Dennis
Ward	Lisa
Ware	Christopher
Watanabe	Fujio
Wells	Bryan
Wentink	Menzo
Weytjens	Filip
Whitesell	Stephen
Wilson	James
Winters	Jack
Woodyatt	James
Worstell	Harry
Wright	Charles
Xhafa	Ariton
Yagi	Akiyoshi

Yamamoto	Takeshi
Yamaura	Tomoya
Yang	Lily
Yao	Zhonghui
Yu	Heejung
Zaks	Artur
Zeira	Eldad
Zhang	Bing
Zhu	Jeffrey
Zuniga	Juan-Carlos
Zweig	Johnny

**IEEE P802.11
Wireless LANs**

Minutes of TGk Garden Grove Meeting

Date: 2005-09-22

Author(s):

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Abstract

This document contains TG 11k minutes from Garden Grove Meeting.

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09/19/05 PM1 Session:

Meeting called to order at 13:30

1. Chair provided the standard IEEE policies and procedures.
 - a. Patent Policy
 - b. Inappropriate Topics
 - c. Documentation and Presentation
 - i. Gray – MIB 245r2
 - ii. Black – Req-Rpt
 - iii. Paine – Security Comment Resolutions 468r5
 - iv. Kwak – Channel Load 934r0, QoS, and Statistics 05/761r1 and 762r1
 - v. Black – Beacon Report
 - vi. Black – Additions and Corrections to Triggered Measurements
 - vii. Kwak – RSNI normative text
 - viii. RCPI confidence specification
 - ix. TSF Information Aging
 - x. Ecclesine – E911 and Location

2. Reviewed Agenda

3. Approved Agenda

4. Deferred Comment Resolution

Comment #6 –
Resolution – decline – delete MedSense

Comment #20 –
Problem –
Remedy –
Resolution – decline – Proposed remedy does not give a link margin.

Comment #71 –
Problem –
Remedy –

Group Discussion

Comment – Busy is a good term
Comment – In several years how will we know the difference between “load” in TGh, TGe, and TGk
Comment – TGh is not “load”

Resolution – decline – load is not ambiguous, because 11e refers to it as QBSS Load.

Comment #72 – 10.3.11 –
Problem –
Remedy –
Resolution – deferred – assigned to Simon Black

Comment #74 –
Problem
Remedy
Resolution – deferred – assigned to Paine

Comment #78 –
Problem –
Remedy –

Group Discussion

Comment – it will be very rare that it would exceed this

Comment – we should just truncate all IEs to 216

Resolution – Accept – P24L22 Add a sentence: “If the received elements exceed the maximum element size, the reported Beacon or Probe Response will be truncated.”

Comment #89 –
Resolution – this clause was rewritten and clarified in 438r0

Comment #95 –

Problem –

Remedy -

Resolution – decline – the 2005 style guide states use a slightly smaller type face and add Note: before the note

Comment #101 –

Problem –

Remedy –

Group Discussion

Comment – in 11h there is a protocol sequence diagram. When 11k is rolled into the standard this protocol diagram will be included. We can add prior to approval for the purposes of illustration.

Resolution – deferred – Simon Black will provide text.

Comment #102 –

Problem –

Remedy –

Resolution – counter – see document 691r1 for justification.

Comment #117 –

Resolution – accepted – 7.3.2.21 has been modified in 438r0

Comment #119 –

Problem

Remedy –

Straw Poll

Do you support last frame and average?

Yes: 6 No: 0 Abstain: 4

Resolution – deferred - Joe to provide the last and the average text per straw poll.

Comment with the same resolution as #119 are: 165, 480, 826, 844, 1130, 1270, and 1587.

Comment #120 –

Problem –

Remedy –
Resolution – counter – Medsense Removed

Comment #130
Resolution – deferred assigned to Simon Black

Comment #134 –
Resolution – counter – P53:L32 and L40: delete “Interval” with “Duration”. P53:L34 and L42: “,
or the measurement interval has expired”

Comment #153 -
Resolution – counter – P53:L32 and L40: delete “Interval” with “Duration”. P53:L34 and L42: “,
or the measurement interval has expired”

Comment #215
Resolution – counter – Measurement interval was deleted and measuring all channels is required
see comment #134

5. Meeting in recess until PM2

09/19/05 PM2 Session:

Meeting called to order at 16:03

1. Resume Deferred Comment Resolution (working on same as #134)

Comment #217

Resolution – counter – same as 215

Comment #390

Resolution – counter – same as 215

Comment #534 –

Resolution – counter – same as 215

Comment #536

Resolution – counter – same as 215

Comment #707

Resolution – counter – same as 215

Comment #709

Resolution – counter – same as 215

Comment #749

Resolution – counter – same as 215

Comment #1192

Resolution – counter – same as 215

Comment #159

Problem –

Remedy –

Resolution – deferred

Comment #165 –

Resolution – deferred – same as 119

Comment #197

Resolution – accepted – same as 62

Comment #240

Resolution – accepted – same as 62

Comment #559

Resolution – accepted – same as 62

Comment #732

Resolution – accepted – same as 62

Comment #201

Resolution – Counter – Medium Sensing Time Histogram has been deleted by group at SF2 meeting.

Comment #244 –
Resolution – Counter – same as #201

Comment #563
Resolution – Counter – same as #201

Comment #736
Resolution – Counter – same as #201

Comment #275 –
Resolution – deferred – assigned to Peter

Comment #276 –
Resolution – decline – same as 310

Comment #281 –
Resolution – decline – same as 310

Comment #310

Group Discussion

Comment – We don't cross reference PHYs

Comment – There is an intro to all of the PHYs, we could put it in there

Resolution – decline –

Comment #331
Resolution – decline – same as 95

Comment #336
Problem –
Remedy –

Group Discussion

Comment – TGh does not contain a measurement for measurement

Comment – 11h, detecting is out-of-scope, but the DFS mechanism is there

Comment – This is an AP issue

Comment – WiMAX has to go to a DFS, there is a scheme to follow in 802.16

Comment – We need a paper from the FCC

Resolution – decline – the group fails to see the requirements above what is defined in TGh.

Comment #338
Problem –
Remedy –

Group Discussion

Comment – TGh does not contain a measurement for measurement

Comment – 11h, detecting is out-of-scope, but the DFS mechanism is there

Comment – This is an AP issue

Comment – 11j can also be used to controller power

Resolution – deferred – P75 insert new line after L24 “dot11PowerConstraint”

Comment #350 –

Resolution – declined - the first 4 octets include the IE id and Len. The TIM element can be parsed as the length is always 4 octets in Beacon Report.

2. Up Down Motion for RRMReports

a. Frame Report

Motion

Instruct the editor to remove the Frame Request/Report measurement from the 11k specification:

Moved: Olson

Seconded: Black

For: 2

Against: 6

Abstain: 3

Motion Fails @ 25%

b. Channel Load

Motion

Instruct the editor to remove the Channel Load Request/Report measurement from the 11k specification:

Moved: Gray

Seconded: Wang

For: 0

Against: 9

Abstain: 2

Motion fails unanimously

c. Location

Motion

Instruct the editor to remove the LCI Request/Report measurement from the 11k specification:

Moved: Lefkowitz

Seconded: Ecclesine

For: 2

Against: 8

Abstain: 1

Motion fails @20%

3. Approve Seattle Ad-hoc minutes

Comment – the minutes and spreadsheet are out-of-sync.

Motion

Move to accept the Seattle Ad Hoc 3 minutes found in 05/896r3

Moved: Kwak

Seconded: Gray

For: 5

Against: 0

Abstain: 6

Motion passes unanimously

4. Approve Teleconference minutes

Motion

Move to accept the teleconference minutes of the teleconferences between San Francisco 2 and Anaheim as found in 05/823r4.

Moved: Wang
Seconded: Kwak

For: 6 Against: 0 Abstain: 5

Motion passes unanimously

5. Resume Deferred Comment Resolution

Comment #360

Group Discussion

Comment – D2.2 includes corrected language and only references the RFC.

Comment – Remove the picture or mark it as informative

Comment – There are differences between RFC and what we have defined in our draft

Resolution – none

6. Simon Black called for orders of the day.

7. Meeting in recess until tomorrow PM 13:30

09/20/05 PM1 Session:

Meeting called to order at 13:30

1. Change agenda to do comment resolutions – passes unanimously
2. Resume Deferred Comment Resolution (working on same as #134)

Comment #360

Problem –

Remedy –

Resolution – decline – The message describing the field of the LCI have been changed to clarify and make more understandable in 05/517r0.

Comment #375

Problem –

Remedy –

Resolution – decline – Motion failed to remove LCI on 09/19/05.

Comment #376

Problem –

Remedy –

Resolution – decline – same as #375

Comment #382

Problem –

Remedy –

Resolution – deferred – Simon Black will make a presentation later in the week

Comment #393

Problem –

Remedy –

Group Discussion

Question – How do you get storms? Answer - Channel 6 and Channel 4 overlap so you could have several probe response without an ACK.

Comment – the current mechanism is not broken, why do we want to change. Answer – we could improve on this.

Vote to accept comment #393

For: 1

Against: 3

Abstain: 8

Motion fails @ 25% and comment is declined.

Resolution – decline - Cost to get the quicker response is not worth the extra probe responses you are going to get.

Comment #1069

Problem –

Remedy –

Resolution – decline – P49L9-L13: for TGk terminals the requirement is worded as a “shall”. For non-TGk or TGk terminals which are disabled the requirement is optional and is worded as “may”.

Comment #1390

Problem –

Remedy –

Resolution – decline – Though the wordings might seem equivilant, but the current text is simpler.

3. Vote on Ad-hoc comments

Motion

Move to accept the Seattle Ad Hoc 3 “accepted”, “counter”, and “declined” comment resolutions in the next 11k draft. They are documented in 05/191r58.

Moved: Black

Second: Kwak

For: 7

Against: 0

Abstain: 8

Motion passes unanimously.

4. Vote to accept teleconference comment resolutions

Motion

Move to accept the San Francisco 2 through the 09/07/05 teleconference “accepted”, “counter”, and “declined” comment resolutions in the next 11k draft. They are document in 05/191r54

Move: Kwak

Second: Black

For: 7

Against: 0

Abstain: 7

Motion passes unanimously

5. Change agenda

- a. Move Paul and Joe’s presentation until tomorrow

6. Technical Presentation – Beacon Measurement Report - Simon Black – 11-05-0947r0, 11-05-0948r0 (normative text).

- a. Discussion on presentation

Question – What was the motivation for this presentation? Answer – short off-channel time are good for battery life. The Pilot contains a great deal of information.

Question – If you measure a channel and don’t see anything, you don’t report anything. The Beacon Report now handles Pilot frames.

Comment – This presentation cleans up a great deal of the problems with the original submission.

Comment – Station selected mode means you don’t care how you measure. Just send me the results. The STA might have regulatory restrictions.

Questions – Why did you make it for Passive Only? Answer – you always get a probe response.

- b. Motion

Move to instruct the editor to include the normative text in 05/948r0 into the next version of the TGk draft.

Moved: Black

Second: Jokela

For: 8

Against: 0

Abstain: 5

Motion Passes unanimously

7. Worstell takes chair
8. Technical Presentation – Security Comment Resolution – Paine - 11-05-468r5
 - a. Comments #358 & 628 - frame protection
 - b. Comments #378, 1385, 1386 – preauth stuff – change
 - c. Comments #830, 1339, 1394 - security bit
 - d. Comment #1340 – Counter
 - e. Comment #1384 – Counter replace “supports” with “advertises”
 - f. Motion
Move to instruct the editor to include the comment resolutions in 05/468r5, except the resolution for #1340, into the next version of the TGk draft.

Moved: Paine

Second: Qi

Discussion on the Motion

Authenticator – is the AP. We discussed this last meeting. Authentication Server is a RADUIS server.

We should table this motion or address each comment individually

We should withdraw

Motion was withdrawn by Richard and accepted by Emily Qi.

9. Motion by Simon Black to recess until after the break passes unopposed.
10. Meeting in recess until PM2 at 16:00.

09/20/05 PM2 Session:

Meeting called to order at 16:00

1. Vote on keeping Statistics Request/Report measurement in the draft.

Motion

Instruct the editor to remove the Statistics Request/Report measurement from the 11k specification:

Moved: Kwak
Seconded: Gray

For: 0 Against: 6 Abstain: 3

Motion Fails unanimously

2. Technical Presentation – Statistics Comment Resolution – Joe Kwak - 762r1
 - a. Will vote tomorrow

3. Resume deferred comments

Comment #312
Resolution – decline – same 375

Comment #437
Problem –
Remedy –
Resolution – declined – An AP, as any STA, may refuse any measurement request.
Furthermore, any STA or AP may disable any future requests of that type.

Comment #445 –
Problem –
Remedy –
Resolution – decline – it is not clear from the comment what change the commenter is requesting.

Comment #458 –
Problem –
Remedy –

Group Discussion

Comment – The AP should be able to remember the client's capability.
Question – What is the use of knowing that the STA is incapable? Example if a STA can only measure in 2.4 and not in 5 GHz. STA is going to respond as incapable.
Comment – we do not allow wildcards per regulatory class. We do for everything else.

Resolution – - J separated sub-bands. J changed to accept the regulatory domains.
Normative text needs to be proposed.

Comment #470
Problem –
Remedy –

Group Discussion

Comment – There is concern that the STA will still make old measurements and when it does report the AP will not need it.

Comment – Simon added a timeout in the Neighbor Report primitive.

Comment – This is not fixable in the short timeframe.

Comment – even if you don't receive the request you can always request the measurement again, which will cancel the original request.

Comment – this does not apply to a STA that roams.

Resolution – decline – TGk would welcome a submission by the commenter.

Comment #486

Problem –

Remedy –

Resolution – Counter – Draft 2.3 includes the text to resolve this measurement procedure issue.

Comment #521

Resolution – accept

Comment #586

Problem –

Remedy –

Resolution – decline – we meet the UMA requirement, so there is no need change. This was addressed at the Monterey Session. The .05db resolution chose was not specifically linked to any UMA requirement. TGk conducted a number of votes to LB71 comments to arrive at an agreed RCPI specification.

Comment #590

Resolution – decline –same as #379

Comment #1114

Problem –

Remedy –

Group Discussion

Comment - Peter is in the room so we should be able to resolve.

Comment – Table k2 is in conflict

Resolution – counter – remove Table (k3) draft 2.3, and replace each reference to table K3 with a reference to Annex J.

Comment with the same resolution as #1114 are: 275 (counter), 280 (counter), 604 (accept), 605 (accept), 779 (counter), 1052 (accept), 1360 (counter), 1411 (accept), 1425 (accept), and 1578 (counter),

Comment #766

Resolution – decline – resolved in Australia

Comment #773

Resolution – decline – resolved in Australia

Comment #1603

Resolution – decline – resolved in Australia

Comment #759

Resolution - accept

Comment #621 –
Problem –
Remedy –

Group Discussion

Could eliminate the KTUs and this would give us an extra bit
Increase to 100TUs

Resolution – counter – 05/691r4 is an overview of the 11k specification.

Comment #634

Resolution – decline – TGk voted to keep the Frame Report on 09/19.

Comment #635

Resolution – decline – TGK voted to keep Location on 09/19.

Comment #638

Resolution – decline - same as 312

Comment #639

Resolution – decline - same as 312

Comment #646

Resolution – decline - same as 312

Comment #647

Resolution – decline - same as 312

Comment #651

Resolution – decline - same as 312

Comment #660

Resolution – decline - same as 312

Comment #867

Resolution – decline - same as 312

Comment #1215

Resolution – decline - same as 312

Comment #1446

Resolution – decline - same as 312

Comment #642

Problem –

Remedy –

Resolution – accepted – same as 372

Comment #644 –

Resolution – accepted – same 372

Comment #758

Resolution – accepted– same 372

Comment #819

Resolution – accepted – same 372

Comment #93 –

Resolution – counter – document 440r1.

Comment #643 –

Resolution – deferred – the request is malformed and should be refused. Simon Black will draft text.

Comment #645

Resolution – decline – same as 629

Comment #658 –

Resolution – decline – same as 312

Comment #763

Resolution – deferred – assigned to Joe Kwak

Comment #780

Resolution – declined – TGk purposely removed informative text to align with style guidelines. We believe that sufficient description is given in Clause 11.11 and sub-clauses.

Comment #817

Resolution – accepted – same as 372

Comment #818 –

Resolution – accepted – same as 372

Comment #911 –

Resolution – counter – text has been clarified regarding the purpose of RCPI in the frame.

Comment #912 –

Resolution - counter – text has been clarified regarding the purpose of RCPI in the frame.

4. Meeting in recesses at 18:00 until AM1 tomorrow

09/21/05 AM1 Session:

Meeting called to order at 8:00

1. Review Agenda

- a. Vote on Stats Request/Report normative text
- b. Kwak – Channel Load Category
- c. Kwak – RSNI normative text
- d. Kwak – RCPI confidence specification
- e. Ecclesine – E911
- f. Gray - MIB

2. Technical Presentation – Statistics Request/Report - Joe Kwak 762r1 (normative text)

- a. Comment
- b. Motion

Motion

Instruct the editor to include the normative text in 05/762r1 into the next version of the TGk draft.

Moved: Kwak

Seconded: Qi

For: 5

Against: 0

Abstain: 4

Motion passes unanimously

3. Continue comment resolution

Comment #914 –
Problem
Remedy –
Resolution – deferred – assigned to Simon Black

Comment #926 –
Problem –
Remedy –
Resolution – decline – allowing a STA to go out and allow it to collect information to construct Neighbor Reports is critical.

Comment with the same resolution as #926 are: 927 and 950.

Comment #935 –
Problem –
Remedy –
Resolution – decline – the use of the AP Channel Report is to allow quicker initial access to the infrastructure. The Neighbor Report is only available after association.

Comment #952 –
Resolution – decline – TGk voted to remove Channel Load took place on 09/19/05. It is not clear from the comment why Channel Load is deemed unreliable.

Comment #1004 –
Problem –

Remedy –
Resolution – decline – The management of the list is outside the scope of TGk

Comment 1011 –
Problem –
Remedy –

Group Discussion

LB71 we had “null” and people did not like it

Resolution – decline – “omitted” is now consistent with 7.3.2.21/22.

Comment #1020
Problem –
Remedy –
Resolution – deferred – assigned to Simon Black

Comment #1199
Resolution – 11.8.9 has been rewritten for clarification. A measurement pause request can be disabled like any other measurement type.

Comment #1338
Resolution – deferred – same as 130 (Simon Black)

Comment #1427
Resolution – decline – out of scope for 11k

Comment #1447
Resolution – decline – TGk vote to delete LCI was taken on 2005/09/19 and it failed.

Comment #589
Resolution – decline – The support for location awareness in TGk is as strong as for any other measurement, therefore, it is mandatory in the PICs. The LCI mechanism provides a means for a station to report that it has limited or no location awareness. It is mandatory to respond, but it is not mandatory for information. You can respond even if you don't know the information.

Comment #658
Resolution – decline – The support for location awareness in TGk is as strong as for any other measurement, therefore, it is mandatory in the PICs. The LCI mechanism provides a means for a station to report that it has limited or no location awareness. It is mandatory to respond, but it is not mandatory for information. You can respond even if you don't know the information.

Comment #1447
Resolution – decline – The support for location awareness in TGk is as strong as for any other measurement, therefore, it is mandatory in the PICs. The LCI mechanism provides a means for a station to report that it has limited or no location awareness. It is mandatory to respond, but it is not mandatory for information. You can respond even if you don't know the information.

Comment #1473

Group Discussion

We should vote on it.

Motion

Move to change the draft to rename RCPI to absolute aRSSI (absolute RSSI).

Moved: Gray

Second: Kwak

For: 2

Against: 3

Abstain: 4

Motion fails @ 40% and comment 1473 is declined

Resolution – decline – TGk voted to use alternate name, but it failed. Change .5db to 1db resolution seem insignificant.

Comment #1318

Problem – decline – The AP to AP association is not permitted and class frame exchanges are not allowed. All radio measurement action frames are class s3 frames.

Comment #1474

Problem – decline – The AP to AP association is not permitted and class frame exchanges are not allowed. All radio measurement action frames are class s3 frames.

Comment #1475

Resolution – counter – Replace the entry in Table k14 for Source=STA, Destination=STA, ReceiverAddr=None with a new value of ReceiverAddr="Individual for DLS in QBSS".

Comment #1319

Resolution – counter – Replace the entry in Table k14 for Source=STA, Destination=STA, ReceiverAddr=None with a new value of ReceiverAddr="Individual for DLS in QBSS".

Comment #1378

Resolution – accept – corrected in D2.3

Comment #1442 – decline – commenter is invited to provide normative text.

Comment #1432 –

Resolution – accepted – the editor should research to see if any changes are required

4. Technical Presentation – Channel Load Comment Resolution - Joe Kwak – 934r1

a. Motion

Move to instruct the chair to incorporate the contents of 05/934r1 into the next version of the LB73 comment resolution spreadsheet.

Moved: Kwak

Second: Gray

Discussion on motion

Question – were these only assigned to Joe Kwak?

Answer – yes this is comment cleanup.

For: 5

Against: 0

Abstain: 3

Motion passes unanimously

5. Meeting in recess until PM1

09/21/05 PM1 Session:

Meeting called to order at 13:30

1. Modified Agenda passes unopposed.
2. Technical Presentation – MIB Comment Resolutions - Paul Gray
 - a. Deferred Comment Resolution

Comment #957 – Clause Annex D – O’Hara

Problem - The creation of MIB attributes that hold solely dynamic information, such as last associated station address, are of very limited usefulness.

Resolution - delete dot11AssociateStation MacAddress, dot11AssociateID INTEGER, dot11AssociateFailStation MacAddress, dot11AssociateFailStatus INTEGER, dot11ReassociateStation MacAddress, dot11ReassociateID INTEGER, dot11ReassociateFailStation MacAddress, dot11ReassociateFailStatus INTEGER

Resolution – decline - We are following precedence on adding notifications in the standard 802.11 MIB. This static information works in conjunction with the notifications provided by TGk.

Comment #958 – Clause Annex D – O’Hara

Problem - The duplication in the MIB of a mechanism to cause measurements to be conducted is unnecessary. The service primitives are sufficient to cause the peer to peer communication necessary for RRM.

Remedy - delete the mechanism of using the dot11RadioResourceManagement object to cause measurements to be conducted. Use this table only fro reporting on measurements initiated by the service primitives.

Resolution – decline - The TGk PAR requires standardization of an interface to upper layers and that is ASN.1. The service primitives only represent a logical interface.

Comment #959 – Clause Annex D – O’Hara

Problem - keeping information for dubious reports and measurements is not necessary

Remedy - delete all attributes from the dot11RadioResourceManagement table that have to do with the Beacon, frame, channel load, noise histogram, hidden station, medium sensing time histogram, and STA statistics measurement requests and reports.

Resolution – decline - The TGk PAR requires standardization of an interface to upper layers and that is ASN.1. The service primitives only represent a logical interface.

Comment #1076 – Clause Annex D - Amman

Problem - Page 75, line 43: The description of "dot11AssociateStation" states "This attribute holds the MAC address from the Address 1 field of the most recently transmitting association response frame...". Tracking this information does not seem useful as it seems like it would change far too frequently to be useful.

Remedy - Remove any MIB parameters that cannot be directly tied to normative behavior in the text.

Resolution – counter – We are following precedence on adding notifications in the standard 802.11 MIB. This static information works in conjunction with the notifications provided by TGk.

Comment #1091 –

Problem - page 77, line 10, what is the default value for dot11RadioMeasurementProbeDelay

Remedy - define a default value

Resolution – Counter - P53L18 Replace dot11RadioMeasurementProbeDelay with ProbeDelay.

Note: P75L35, P77L4-11 Remove all references to dot11RadioMeasurementProbeDelay

Comment #1231 – Clause Annex D – Black

Resolution – deferred – find Motorola document and make changes

Comment #1232 – Clause Annex D - Black

Problem - Conformance entries probably need to include a new SMTbase group to cover additions to dot11StationConfigEntry with the previous group deprecated?

Remedy - Add conformance group for new config items.

Resolution – Declined – Please provide normative text

Comment 1298 – Clause Annex - Olson

Problem - In the dot11RRMReport section there is no way to report the mode bits returned in measurement reports (late bit, incapable bit, and refused bit).

Remedy - Add a field to handle these bits in all measurement report tables.

Resolution – accept – Add truth value following to each report:

dot11XXXXXXXXXXXXRptMeasurementMode 0,1,2 bits

Comment #1307

Resolution – counter – capabilities bit was removed

Comment #1309

Resolution - counter – capabilities bit was removed

Comment #1310

Resolution – accept - Add a new object to the dot11RRMNeighborReport entry that will be called dot11NeighborReportTSFOffsetFlag. The object will be a truth value where true means the TSFOffset is included in the Neighbor Report entry.

Comment #1312

Group Discussion

Allow TGv to handle?

Resolution – deferred – Tim will provide information

Comment #1428 – Annex D - Soomro

Problem - While MIBs are included for measurement of statistics for TCs, similar MIBS are not added for traffic streams.

Remedy - Add similar statistics for traffic streams. See doc:11-05-0164

Resolution – accept – already added in 1637r4

Comment #1555 – Clause Annex D - Kwak

Problem - RRMRequest Table is out of sync with draft text: 1. Token in MIB should actually be Dialog Token, Measurement Token is missing from MIB. 2. Need to add Number of Repetitions, Pause Time, Pause Unit.

Remedy - Details to be provided by Joe Kwak at May meeting.

Resolution – decline – token for external SNMP entity management is very complex.

Comment #1557 – Clause Annex D - Kwak

Problem - Our MIB text descriptions are still out of sync with the draft text. Once the draft text stabilizes for good, someone needs to carefully review each MIB variable name and text description in the MIB and align it with descriptions in the latest text.

Resolution – deferred

3. Technical Presentation – RCPI Accuracy - Joe Kwak (995r0)
4. Technical Presentation – Security Comment Resolution – Marty Lefkowitz (468r6)
 - a. Comment #1385 – declined
 - b. Comment #1386 – declined
 - c. Comment #830 – declined
5. Meeting in recess until PM2 tomorrow

09/21/05 PM2 Session:

Meeting called to order at 13:30

1. Resume Technical Presentation – Security Comment Resolution – Marty Lefkowitz (468r6)
 - a. Comment #1340 – decline
 - b. Motion

Motion

Move to instruct the chair to incorporate the contents of 05/468r6 into the next version of the LB73 comment resolution spreadsheet.

Moved: Lefkowitz

Second: Qi

For: 8

Against: 0

Abstain: 3

Motion passes unanimously

2. Technical Presentation – RSNi normative text – Joe Kwak - 779r1(ppt) 941r0(normative text)
 - a. Comment – seems strange to have an implementation method in normative text. Should remove normative text referring to calculating.
 - b. Comment – If we don't address it here we will receive comments about how to calculate.
 - c. Comment – How do you know when the last ANPI was calculated?
 - d. Comment – What if the station is moving? The will invalidate the numbers.
 - e. Comment – The reference to measurement duration seems out of place.
 - f. Comment – You should have average noise over measurement.
 - g. Comment – There is no regulatory domain that stipulates powers. TGh does not mandate RPI.
 - h. Joe will rework and try to resubmit
3. Technical Presentation – E911 and Location – Ecclesine - 999r0 (PPT)
 - a. The document contains links to some standards for location with VOIP
 - b. TGu wants to TGk to support the NENA (National Emergency Number Association Technical Committee Chairs
 - c. 988r0 – is a letter of proposal for vote by group on Friday
 - d. FCC believes the NENA location of the AP is good enough today (not the client).
 - e. We are behind the cellular world – which currently doesn't meet the 67% accuracy specification. Inside the building you can't utilize GPS.
 - f. Does 11k need to do anything? Answer – we need to be able to advertise an AP's ability to conform to the E911 standard. WiFi Alliance might have to take on the issue.
4. Technical Presentation – Simon Barber on status of Draft.
 - a. Comment #472 – Clause 3.51 – definition of a neighbour AP.
 - b. Comment #1147 – be consistent in naming neighboring AP or BSS.
5. Technical Presentation – Location – Peter Ecclesine – 579r1
 - a. Motion

Motion

Move to instruct the editor to include the normative text in 05/579r1 into the next version of the TGk draft.

Moved: Ecclesine

Second: Barber

For: 10

Against 0

Abstain: 2

Motion passes unanimously

6. Meeting in recess until tomorrow AM1.

09/22/05 AM1 Session:

Meeting called to order at 08:00

1. Review Agenda – agenda passes unanimously
 - a. This meeting is conflicting with TGv
 - b. Determine if we should recess.
2. Motion on Joe's presentation

- a. Motion

Motion

Move to instruct the chair to incorporate the contents of the 05/761r1 into the next version of the LB73 comment resolution spreadsheet.

Moved: Kwak

Second: Ecclesine

For: 4

Against: 0

Abstain: 0

Motion passes unanimously

3. Motion on RCPI Confidence
 - a. Motion

Motion

Move to instruct the editor to include the normative text in 05/995r0 into the next version of the TGk draft.

Moved: Kwak

Second: Jokela

For: 5

Against: 0

Abstain: 0

Motion passes unanimously

4. Deferred comment review

Comment #74 – Clause General - Winget

Problem - Unless these measurement requests and responses are protected, an attacker can mislead the receiver of these reports by easily forging the reports.....or, force the STAs to an effective denial of service attack by forcing them to continually go off to do measurements.

Remedy - consider making these measurement requests data frames. Otherwise, this work will have to await the ADS SG to form and fulfil it's PAR and 5 criteria.

Resolution – decline – see document 468r1 – same as 468r1 – TGw has the charter to address this

Comment #1091 – addressed in MIB comments

Problem - page 77, line 10, what is the default value for dot11RadioMeasurementProbeDelay

Remedy - define a default value

Resolution – counter – changed the name of the field.

Comment #1234 – Clause General - Shellhammer

Problem - The 802.11n standard is very likely to support both 20 and 40 MHz channels. If 11k does not prepare now to support 40 MHz channels in the future then it will not be extensible to support 40 MHz.

Remedy - Add reserve bits to the frame, beacon and other applicable reports to allow for extension of 11k to support 40 MHz channels.

Resolution – decline – regulatory class defines the channel width (reference annex J). No additional bits for channel specification are needed.

Comment #1604 – 7.3.2.22.11 - Ecclesine

Problem - The LCI report captures location information, but does not provide heading or direction, which is useful with directional antenna systems and operations that attempt to project where the station is going to be in the future, like 802.11r, 802.11s and 802.

Remedy - Commenter will submit a new measurement report of Azimuth type, Azimuth resolution and Azimuth to support this.

Resolution – resolved in document 11-05-893r0, Peter will present later today.

Comment #469 – Clause 7.3.2.22.11 – Qi

Problem - Azimuth of antenna and its heading information would be also helpful for prediction of optimal orientation.

Remedy - None

Resolution – accepted – same as 1604 – resolved in 893r0

5. Peter Ecclesine moves to recess so we can attend TGv and it is seconded by Joe Kwak
6. Meeting in recess until PM1.

09/22/05 PM1 Session:

Meeting called to order at 13:30

1. Review Agenda – agenda passes unanimously
 - a. Triggered Measurements 1005r0
 - b. TSF Information Aging 05/977r0 05/436r1
 - c. Misc Normative 05/976r0 and spreadsheet is ???
 - d. Vote on Azimuth 05/893r0
 - e. 11k Lessons Learned
 - f. 11k Vision
 - g. Gray- MIB Vote
 - h. 5:30 Votes (1) Teleconferences (2) Go to Letter Ballot
 - i. Discussion on need to prepare

2. Technical Presentation –Triggered QoS Measurements - Simon Black 11-05-1005r0
 - a. Comment – This is listed as a mandatory report in the PICs in D2.3.
 - b. Motion

Motion

Move to instruct the editor to incorporate the normative text changes in 05/1005r0 into the next version of the TGk draft.

Moved: Black
Second: Qi

For: 8 Against: 0 Abstain: 2

Motion passes unanimously

3. Technical Presentation –TSF Offset Errors – Joe Kwak - 11-05-436r1 11-05-977r0
 - a. Comment – most comments relate to informative text
 - b. Comment – there is probably not a great reason to calculate offset, because you can request another Neighbor Report or calculate the drift yourself.
 - c. Comment – calculating TSF offset is outside the scope of our group
 - d. Comment – It is bound by 1.5 TUs which is not a problem.
 - e. Straw Poll

Should TGk add a drift rate field to the TSF Offset information?

Yes: 3 No: 5 Abstain: 8

4. Technical Presentation –Request Report Comment Resolution – Simon Barber - 11-05-1003r1 (doc) 11-05-1004r1 (xls)
 - a. This text was drafted off of 2.2 not 2.3
 - b. We will vote on this at 4:30.

5. Technical Presentation – Diverse Comments - Joe Kwak – 976r0 (normative text) 978r0 (spreadsheet).
 - a. Address the following comments: #119, 165, 480, 621, 763, 826, 842, 844, 1130, 1270, and 1587.
 - b. Will vote at 5:30

6. Technical Presentation – Receive Signal to Noise Indicator(RSNI) – Joe Kwak (941r1)

-
- a. Addresses the following comments: 846, 1448 and 1592
 - b. Will vote at 5:30

7. **Note to Editor 976r0 contains a duplicate “the”**

8. Meeting in recess until PM2

09/22/05 PM2 Session:

Meeting called to order at 16:00

1. Technical Presentation – Azimuth – Peter Ecclesine – 11-05-893r0
 - a. Question – is this an agreed on external standard? Answer – we are utilizing external standards, but it was not agreed on.
 - b. Comment – You must have a scaling factor.
 - c. Question – Why include this in TGk. Answer – you need the direction of the station helps you with the position.
 - d. There are a few problems in the text
 - o Table20b – the number is wrong – there is text
 - o Figure k28a – is not in proper format
 - o Note – the editor will have to do some work on this presentation. Editor’s response, “I can change format, but not numbers”.
 - e. Question – Do you want information from the station or the antenna? Answer – the station. I
 - f. Question – What if the antenna is embedded in the device? Answer – it is an orient-able surface. If you don’t where True North is, you would report incapable.
 - g. Comment – There is a great deal of variability between object and antenna.
 - h. Comment – This should be an optional measurement in the PICs.
 - i. Comment – The text is not clear about “Am I receiving” or “Are you receiving”.
 - j. Question – How do you respond to omni-directional? Answer – you respond with incapable. The ISO should have described omni-directional antennas.
 - k. Comment – Why have the measurement mandatory?
 - l. Comment – You should merge this into the LCI report.
 - m. Comment – We should submit this early (now).
 - n. Comment – We should delay and put this in later so we don’t generate extra comments.
 - o. Straw Poll
Would you support adding optional azimuth to the LCI report?

Yes: 16

No: 0

Abstain: 2

Note: The 2 comments related to Azimuth that will remain deferred

2. Vote on Request Report Comment Resolution (Normative Text) and (Spreadsheet)

- a. Normative Text

Motion**Move to instruct the editor to include the normative text in 05/1003r1 into the next version of the TGk draft.****Moved: Black****Seconded: Ecclesine****For: 12****Against: 0****Abstain: 2****Motion passes unanimously**

- b. Spreadsheet

Motion**Move to instruct the chair to incorporate the comments marked req-rpt-2 in Notes Column of 05/1104r0 into the next version of the LB73 comment resolution spreadsheet.**

Moved: Black
Seconded: Ecclesine

For: 11

Against: 0

Abstain: 2

Motion passes unanimously

3. Lessons learned discussion
4. Vision Statement
5. Technical Presentation – MIB Comment Resolution -

- a. Motion on the normative text

Move to instruct editor incorporate the normative in document 11-05-245r5 into the next TGk draft.

Moved: Gray
 Seconded: Black

For: 13

Against: 0

Abstain: 2

Motion passes unanimously

- b. Motion on spreadsheet

Move to instruct chair to incorporate all the comment resolution in 11-05-963r5 into the master spreadsheet.

Moved: Gray
 Seconded: Black

For: 10

Against: 0

Abstain: 2

6. Motion on teleconferences empowerment.

- a. Comment – We shouldn't need teleconference if we go to letter ballot
- b. Comment – We should approve in case we need it.

Motion

Move to request the WG to empower TGk to hold weekly teleconferences (Thursdays at 11:30am East time) through 2 weeks after the Vancouver meeting as required to conduct business including creating and issuing drafts for the Letter Ballots and handling other business necessary to progress through IEEE standards process.

Moved: Barber
 Second: Gray

For: 11

Against: 0

Abstain: 0

Motion passes unanimously

7. Vote on Misc. Comments Resolutions – Joe Kwak
 - a. Motion

Motion

Move to instruct the editor to include the normative text in 05/976r0 into the next version of the TGk draft.

Moved: Kwak
Second: Ecclesine

For: 9 Against: 0 Abstain: 0

Motion passes unanimously

8. Vote on Misc. Comments Resolutions – Joe Kwak

a. Motion

Motion

Move to instruct the editor to include the normative text in 05/941r1 into the next version of the TGk draft.

Moved: Kwak
Second: Gray

Discussion on Motion

Question – what are the changes? Answer – NAV question and addressed the ambiguity in associate response.

Comment – We have removed the algorithm for ANPI

For: 8 Against: 0 Abstain: 2

Note to editor – the word “measure” is misspelled incorrectly on P9 dot11NoiseHistogramReports.

Motion passes unanimously

9. Vote on taking the draft to letter ballot

a. Editor’s comment – how we going to reconcile resolved comments

Motion

Move to request the Working Group to authorize a 40-day Letter Ballot of 802.11 TGk draft 3.0 to conclude no later than 11/11/05.

Moved: Black
Second: Kwak

For: 13 Against: 0 Abstain: 0

Motion passes unanimously

10. Vote to empower editor

Motion

Move to empower the TGk editor to produce a Letter Ballot draft (D3.0) based on approved comment resolutions and documents from the Anaheim meeting

Moved: Black
Second: Kwak

For: 13

Against: 0

Abstain: 1

Motion passes unanimously

11. Vote misc. comment cleanup spreadsheet

Motion

Move to instruct the chair to incorporate all the comments in 05/978r1 into the next version of LB73 comment resolution spreadsheet.

Moved; Kwak

Second: Gray

For: 9

Against: 0

Abstain: 2

Motion passes unanimously

12. Meeting adjourned at 17:56.

Report of TGm – September 2005

DATE: September 2005

Author(s)

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Abstract

**Report of the meeting of TGm at the September 2005
session.**

Goals for September 2005

- **Process technical comments received during recirculation ballot**
- **Prepare report on requirements for conditional approval**
- **Submit draft to sponsor ballot**
- **Process any interpretation requests received**

Submissions

- **Submissions**
 - none

Proposed Agenda

- **Consent agenda:**
 - Approve minutes and report from July and August 2005 meetings
- **Review IEEE Patent Policy**
- **Review interpretation request procedure**
- **New business**
 - Submissions
 - Process technical comments from letter ballot
 - Discuss inclusion of 802.11e in 802.11REV-ma
 - Approve report on requirements for conditional approval
 - Issue draft for sponsor ballot
 - Start sponsor ballot
- **Adjourn**

Motion #1 to adopt Agenda

- **Moved: to adopt the agenda**
- **Mover: Jon Rosdahl, Darwin Engwer**
- **Passes: 7, 0, 0**

IEEE-SA Standards Board Bylaws on Patents in Standards

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

Interpretation Procedure

- **<http://standards.ieee.org/reading/ieee/interp/>**
- **Send email to Linda Gargiulo (l.gargiulo@ieee.org)**
- **IEEE forwards requests to the WG**
- **WG responds**

Processing of Technical Comments

- **No new technical comments received**

Inclusion of 802.11e in 802.11REV-ma

- **802.11REV-ma draft 4.0 was approved by the working group in LB74 and three subsequent recirculations to send to sponsor ballot**
- **Before the sponsor ballot is completed, the approved/published text of 802.11e must be incorporated into 802.11REV-ma**
 - This is required by IEEE-SA policies and procedures
 - Otherwise, 802.11e would be withdrawn upon approval of 802.11REV-ma
- **The sponsor group will review and approve this new version of 802.11REV-ma as part of the sponsor ballot process**

Motion #2

- **To approve the resolutions to the comments received on LB77 as they are shown in document 05/1012r0.**
- **Moved: Andrew Myles, Darwin Engwer**
- **Passes: unanimous**

Motion #3

- **Moved: To approve document 05/926 as the report to the 802 Executive Committee (EC) on the requirements for conditional approval to forward 802.11REV-ma to sponsor ballot, requesting the chair of 802.11 to forward this report to the EC on behalf of the working group.**
- **Moved: Darwin Engwer, Andrew Myles**
- **Passes: unanimous**

Motion #4

- **Moved:** to request the chair of 802.11 to begin the sponsor ballot, using draft 4.0 of 802.11REV-ma, after all requirements for conditional approval as set forth in the 802 Policies and Procedures have been met.
- **Moved:** Andrew Myles, Darwin Engwer
- **Passes:** unanimous

Work completed

- **Final working group approval of 802.11REV-ma**
- **Documentation of meeting the requirements of conditional approval**
- **Start of sponsor ballot (in the very near future)**

Output Documents

- **05/0924r0: This report**
- **05/0926r0: Report for conditional approval of 802.11REV-ma to sponsor ballot**
- **05/1012r0: Report of comments and resolutions on LB77**

Goals for November

- **Process comments received on the opening sponsor ballot**
- **Initiate recirculation ballot**
- **Process any interpretation requests received**

Adjourn

- **Meeting adjourned at 3:04pm on September 22, 2005**

Attendees

Attendees

- **Jon Rosdahl**
- **Terry Cole**
- **Darwin Engwer**
- **Jan Kruys**
- **Masahiro Takagi**
- **Tomoya Yamaura**
- **Victor Stolpman**
- **Roger Durand**
- **Yasuhiko Inouye**

**IEEE P802.11
Wireless LANs**

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

Date: 2005-09-19

Author(s):

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Abstract

Cumulative minutes of the High Throughput Task Group meetings held during the IEEE 802.11 Interim session in Santa Ana from September 19 through 23, 2005. The session was chaired by chair person elect Bruce Kraemer from Conexant.

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Executive Summary (also see Chairs' meeting doc 11-05-0854r3 and closing report doc. 11-05-0939r0):

1. Only 3 out of the allotted 8 hours of session time was used to allow the JP as much time as possible to meet F2F.
2. The JP gave two reports, an Opening Report (11-05-0876r1) in which reviewed the scope of the task, itemized the progress they have made since July and the topics currently being worked on as well as the topics remaining to be addressed, and a Closing Report (11-05-1001r0) in which they described the progress made during the week and presented a time line.
3. The JP time line indicated that their goal remained to deliver a baseline draft to the TG November 7.
4. TGn chair, using the 'draft in November' assumption projected a *best case* scenario of ratified standard in April 2007. [See 11-05-845r3]
5. One technical presentation on Wireless VoIP Design Considerations was made by Eldad Perahia, doc. 11-05-0932r2
6. The TGn chair presented a strawman agenda for the Nov meeting which was highly dependent on progress made between now and November by the JP team. JP team will give a status update after their Oct. F2F. If a draft is presented in November a confirmation vote could be held and a call for LB made at the November meeting.

Note: 1) 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.

Detailed cumulative minutes follow:

Monday; September 19, 2005; 10:30 AM – 12:30 PM [~ 170 attendees];

1. Meeting was called to order by Task Group chair person at 10:33 AM
2. New attendees ~ 6
3. Chairs' Meeting Doc 11-05-0854r0
4. Chair read IEEE-SA Standards Board Bylaws on Patent Policy and additional Pat Com Guidance
5. Chair reviewed topics NOT to be discussed during the meeting – licensing, pricing, litigation, market shared
6. Letters of Assurance (LOA) can be set to Pat Com but details should not discussed here
7. Attendance reminder – for this meeting attendance will be manual (IEEE registration desk) and on an honour system
8. Make sure your badges are visible
9. No company logos on presentations

10. Chair reviewed July-Sept progress in order to provide the background to set the agenda for this meeting:
- 10.1. Joint merger's request for a down selection postponement was granted
 - 10.2. Single Stream Function Requirements (#10, 11) adopted/added
 - 10.3. Timeline discussed
 - 10.4. Merged status update was put on server by Sept. 12
 - 10.5. No email related questions have been received
11. Expected Sept. agenda proposed at the July meeting
- 11.1. Merged proposal Presentation & Discussion
 - 11.2. Coexistence Assurance status update
 - 11.3. Review Document linkage for changed FR
 - 11.4. Formulate and consider WFA liaison request
- 12. Motion by Jon Rosdahl to approve July minutes, 11-05-0665r0, was seconded by Aon Mujtaba and approved unanimously**
13. Chair discussed agenda for this meeting (granted 8 hours total):

Time	Monday	Tuesday	Wednesday	Thursday
8:00-10:00	X	X	X	X
10:30-12:30	Opening, Agenda Minutes, Merger Status CA & SS status	X	X	Merger Report & Status Q&A
1:30-3:30	Merger Status Q&A	X	X	X
4:00-6:00	X	X	X	Timeline Plans for Nov Any other business
7:30-9:30	X	X	X	X

14. Chair called for additional presentations:
- 14.1. Eldad Perahia, Intel, doc. 11-05-0923r2; Wireless VoIP
- 15. Motion to approve the agenda by Aon Mujtaba and seconded by Jim Petranovich passed without objection**

16. Presentation on status of the Joint Proposal (JP) Opening Report introduced by Jon Rosdahl, (11-05-0876r1)
 - 16.1. JP started with a 'clean sheet'
 - 16.2. 42 companies
 - 16.3. 292 people
 - 16.4. Weekly Conference Calls (CCs)
 - 16.5. 1 vote per company
17. Phy status presented by Aon Mujtaba and Jim Petranovich
 - 17.1. Items agreed upon
 - 17.1.1. Convolutional Encoder – Mandatory
 - 17.1.1.1. Generator polynomial (1338, 1718)
 - 17.1.1.2. Rate = $\frac{1}{2}$
 - 17.1.2. Puncturing rates and patterns – Mandatory
 - 17.1.2.1. Rate = $\frac{2}{3}$, $\frac{3}{4}$, and $\frac{5}{6}$
 - 17.1.3. Interleaver – Mandatory
 - 17.1.3.1. Block based
 - 17.1.3.2. One for each spatial stream
 - 17.1.3.3. Spatial streams separated by frequency rotations
 - 17.1.4. RF
 - 17.1.4.1. 20MHz mandatory (64 point FFT)
 - 17.1.4.2. 40MHz optional (128 point FFT)
 - 17.1.5. MCS set - mandatory
 - 17.1.5.1. 1 & 2 Spatial Streams
 - 17.1.5.2. BPSK, QPSK, 16-QAM, and 64-QAM
 - 17.1.5.3. Rate = $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, and $\frac{5}{6}$
 - 17.2. Work in Progress
 - 17.2.1. Preamble has been challenging but they are close
 - 17.2.1.1. Mixed mode
 - 17.2.1.2. Green Field – needs work
 - 17.2.2. FFT Tone Format in 20MHz and 40MHz:
 - 17.2.2.1.1. Number of data tones
 - 17.2.2.1.2. Number of pilot tones
 - 17.2.3. Advanced Coding
 - 17.2.3.1. as part of BF tiger team
 - 17.2.4. Transmit beam forming
 - 17.2.5. Range extension
 - 17.3. Items yet to be considered in detail
 - 17.3.1. Parser
 - 17.3.2. Rate feedback (link adaptation)
 - 17.3.3. Space time block coding
 - 17.3.4. Support for Single Spatial Stream devices
 - 17.3.5. Spatial spreading
 - 17.3.6. Antenna selection
 - 17.3.7. 256 QAM
18. Matt Fischer presented the MAC status
 - 18.1. Convergence Emerging in the following areas
 - 18.1.1. MSDU aggregation
 - 18.1.1.1. Draft text is in process of ballot
 - 18.1.2. Block Ack modifications

- 18.1.2.1. Includes:
 - 18.1.2.1.1. Compressed Block Ack
 - 18.1.2.1.2. Partial State BA
 - 18.1.2.1.3. Implicit BAR
 - 18.1.2.1.4. No-Ack
- 18.1.2.2. Draft text in final revision stage
- 18.1.3. EPP (PLCP length spoofing)
 - 18.1.3.1. Draft text in final revision stage
- 18.2. Items currently under discussion
 - 18.2.1. "PSDU aggregation"
 - 18.2.1.1. A-MPDU draft text currently under ballot
 - 18.2.1.2. Initial draft of A-PPDU under review before ballot
 - 18.2.2. MMP/PSAD (power saving multi-poll mechanism)
 - 18.2.2.1. Draft text created, but not ready for balloting
 - 18.2.3. Reverse direction grant
 - 18.2.3.1. Substantial progress, draft text almost complete
 - 18.2.4. Coexistence
 - 18.2.4.1. Presentations presented/reviewed
 - 18.2.5. HT Control field
 - 18.2.5.1. Topic covers signaling for several HT features
 - 18.2.5.2. Straw polls ongoing
- 18.3. Items in the pipeline
 - 18.3.1. Rate feedback (link adaptation)
 - 18.3.1.1. Cross MAC/PHY team recently created
 - 18.3.2. Capabilities advertisement
- 19. Jon reviewed plans for the week and timeline going forward
 - 19.1.1. Final JP Confirm Vote in Nov. is still the goal
- 20. Chair asked the proposal team if any Q's were received? A – no
- 21. Chair asked for any questions from the floor
 - 21.1. Phy – which streams are under discussion? A – special requirements for more than 2 spatial streams are under discussion
- 22. Chair inserted some questions:
 - 22.1. Can we still expect a complete draft to be posted before the November meeting?
 - 22.1.1. A – still looking good
 - 22.2. Can the TG officers or members help expedite in any way?
 - 22.2.1. A- none at this time
 - 22.3. Was a pause for a merger the right decision?
 - 22.3.1. A - yes
 - 22.4. What happens if the JP is not completed in time?
 - 22.4.1. A – revert back to down select process (January 2005) or agree on a different process at a 75% level
- 23. CA status report by Sheung Lee
 - 23.1.1. Last meeting reviewed BT and .16 characteristics
 - 23.1.2. This week Zigbee and UWB will be reviewed in .19
- 24. Update on FR 10&11
 - 24.1.1.1. nothing further to announce at this time
- 25. Chair introduced the timeline topic
 - 25.1. Chair made some updates and asked members for comment
 - 25.2. First WG LB still targeted at 1Q2006 and ratification in 2007

26. Chair noted that a Technical Editor Election remains pending on issuance of working draft
- 27. Motion to recess the meeting by Adrian Stephens and seconded by TK Tan passed unanimously.**
28. Chair recessed the meeting at 11:46 AM

Monday, 9-19-05, 1:30 PM-3:30PM

29. Chair reconvened the meeting at 1:30 PM
30. Presentation - Eldad Perahia – 11-05-0923r2; Wireless VoIP System Design Considerations
- 30.1. Design Criteria
 - 30.1.1. Time - Talk time, standby time, battery life
 - 30.1.2. Call quality
 - 30.1.3. Seamless handovers
 - 30.1.4. Coverage, range
 - 30.1.5. Capacity
 - 30.2. Aggregation is a good thing!
 - 30.3. Summary
 - 30.3.1. We described the criteria for designing wireless VoIP systems and equipment in the enterprise
 - 30.3.2. The most important to the user is the talk time and standby time of the handheld device, no dropped calls, and good call quality
 - 30.3.3. With respect to system performance, modest aggregation substantially improves call capacity making the impact of longer 11n preambles negligible
 - 30.3.4. For next generation wireless devices, improvements should include aggregation integrated with power save for enterprise and extended range for SOHO applications
 - 30.4. Questions:
 - 30.4.1. Slide 9 – Is the spread sheet available? A – yes
 - 30.4.2. Slide 11 – What is the curve showing? A – Talk time vs preamble length
 - 30.4.3. Comment – multiple TX antennas would be interesting
 - 30.4.4. Slide 13 – was data in 11-05-0399 used? A – yes we used it for applications
31. Any further questioned? None
32. Chair reviewed remainder of the weeks agenda
- 33. Motion to recess by TK Tan and seconded by George Vlantis passed without objection.**
34. Chair recessed the meeting at 1:58PM

Thursday, 9-22-05, 10:30 – 12:30 PM

1. Chair called the meeting to order at 10:31 AM
2. Chair stated this morning's goal was to complete the weeks business in this session so we could relinquish the afternoon session
3. Presentation on status of the Joint Proposal (JP) Closing Report introduced by Jon Rosdahl, (11-05-1001r0)
4. Phy status – Aon Mujtaba
 - 4.1. Recalled baseline on Monday
 - 4.2. Progress since Monday:
 - 4.2.1. Preamble Agreement
 - 4.2.1.1. Mandatory – long mixed mode preamble, legacy
5. MAC status - Matt Fischer

6. Next Steps – Jon Rosdahl
 - 6.1. 2 F2Fs planned between now and Nov.
 - 6.2. Status updates will be published after each F2F
 - 6.3. Convergence accelerating
7. Questions:
 - 7.1. Schedule? A – .11n confirmation vote in Nov. is still the goal
8. Chair reviewed timeline for TGn in 11-05-0854r2
 - 8.1. Optimistic goal – release first LB in November
 - 8.2. 9 months to complete LB process
 - 8.3. 4 months to complete SB process
 - 8.4. Submission for approval – Submit to ExCom – Feb 2007; Rev(review committee)Com - Mar. 2007; Standards Board Approval in April 2007
 - 8.5. Net is that Chair still shows that April 2007 is possible
9. Discussion?
 - 9.1. What happens if the Feb date is missed? A – slips to July 2007 and Sept 2007
 - 9.2. Recall TGg; are we being more aggressive? A – did not use TGg as a model
 - 9.3. Time between baseline proposal and issuing LB? A – immediate (0.1 to 1.0)
 - 9.4. How many LBs Are assumed? A – 3 with 2 months in between
 - 9.5. Very aggressive? A – yup based on baseline draft availability
10. Any objection to leaving this as the plan of record? Body – none
11. Chair discussed strawman proposal for the time between now and the Vancouver meeting:
 - 11.1. No teleconference calls for SS or CA will be needed
 - 11.2. No teleconferences or interim meetings of TGn will be needed
 - 11.3. Merged proposal draft posted to server & announced on reflector by Monday, Nov 07 (1 week prior to meeting)
 - 11.4. Questions submitted via email by Thursday Nov 10
 - 11.5. Technical Proposal and Responses will be presented beginning Monday Nov 14
12. Chair discussed strawman proposal for the Vancouver meeting agenda
 - 12.1. Merged proposal Presentation & Discussion , Q&A
 - 12.2. 1st Confirmation vote, “no” vote explanations & remedies if <75% “yes”
 - 12.3. Technical Editor Election
 - 12.4. Coexistence Assurance status update
13. Discussion?
 - 13.1. Time slots, assume only 18 hours available? A – 24 hours is the max (no evening sessions due to tutorials since next meeting is a plenary)
 - 13.2. What about ad hoc meetings on Sunday and evenings? A – 3 hours Monday morning and 2 Thursday are possible
 - 13.3. Comment – not just 802.11 but 802 Plenary in Vancouver
 - 13.4. Comment – we will need out of band time also so don’t schedule every minute as in session time
 - 13.5. Chair comment – if he asks for time and does not use it he is penalized
 - 13.6. Comment – it will become clearer after the interim report from the October F2F
 - 13.7. Comment – final time allocation will be made on Nov. 7 so please get all feedback in by that time
14. AOB? A - none
15. **Motion to adjourn by Jim Petranovich and seconded by Jon Rosdahl passed unanimously.**
16. Chair adjourned the meeting at 11:31 AM.

**IEEE P802.11
Wireless LANs**

September 2005 TGp/WAVE Minutes

Date: 20-September-2005

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Abstract

This document includes the meeting minutes for the IEEE 802.11 WAVE Task Group held in Los Angeles, CA, from September 19th to 22th, 2005, under the TG Chairmanship of Lee Armstrong of Armstrong Consulting and editor Wayne Fisher of ARINC. Minutes are taken by Filip Weytjens of TransCore.

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Tuesday September 20, 2005, 4:00 PM Session

Lee Armstrong chair of the TGp working group opened the meeting at 4:00 PM.

The policies, rules, and objectives were presented to the working group. The main objective of the meeting is to prepare the document for the next meeting in Vancouver.

Lee discussed the agenda and requested whether the agenda was acceptable as submitted to the server. The working group approved the agenda.

The modifications to the July 05 – San Francisco meeting minutes were discussed and approved.

The modifications to the meeting minutes were posted the server (11-05-0811-02-000p-San Francisco-2005-WAVE-minutes.doc)

Knut Evensen presented the liaison report on ETSI (Doc: IEEE 802.11-05/0958r0).

Knut Evensen presented the liaison report on ISO TC204 (Doc: IEEE 802.11-05/0959r0).

Tom Kurihara, chair IEEE P1609, presented the liaison report on IEEE P1609. (Doc: IEEE 802.11-05/nnnr0)

The action items from last meeting were discussed.

ACTION 18: Broady Cash will update the language in section 3.52, 5.9.2, 5.9.3 addressing the relation made to the In-vehicle bus.

Closed

19, 20 & 21 (Cash) Measurements explanation asked from Koga – Open (Carryover)

Background: It was questioned which information was used to derive the requirement for the adjacent channel rejection, Minimum sensitivity, and Alternate adjacent channel rejection in table 20.3.10.1.1. Same question came up for sections 20.3.10.3 to 9. It was mentioned that measurements were performed and that calculations showed that this requirement could be met. It was decided that the available documentation will be made available and will be discussed off-line. A list will be developed on which tests need to be performed in order to verify the requirements. The list will be presented next meeting.

Open: The information needed is still restricted by the government. It is in the review process but hasn't been released yet.

ACTION # 25: Look at all sections containing priority wording (clause 5.9.8, K.3, K.4 and etc) – Justin McNew

Changes are made and will be presented to the group tomorrow.

Closed

32 Richard Noens plans to submit new comment on test parameters in clause 20.3.10. This was initiated from Randy Roebuck's question on whether these parameters were tested at chip or system level?

Closed

The question was not clear and the action item has been restated as:

ACTION: # 40 Richard Noens and Randy Roebuck to get together to submit new comments on test parameters in clause 20.3.10.

ACTION # 34 Provide test clause comments from OmniAir “Device Certification” perspective – Randy Roebuck by June 30

Open

ACTION #36: Generate a definition for Safety Message, Message stream, and service provider.

Closed

Some were addressed others were not. The action was restated to:

ACTION #41: A definition will be provided for message stream and safety message. (Scott Andrews)

ACTION #37: Provide input on the Doppler curve to be used in paragraph 20.3.10.7 (M. A. Ingram)

The Doppler curve was taken out and put in the test standard as a result, the action item was no longer applicable.

Closed

ACTION #38: Ask Bob O’hara for the element ID number and look into what is required to update the document. (Jason Liu)

This has been addressed and the result will be presented tomorrow. The action item is taken over by events.

Closed

ACTION #39: Provide definition for service provider (comment: Motorola/38). – Rick Noens
See action item 36.

Closed

Wayne posted the excel spreadsheet (954r0) included the comments received to date. A presentation was prepared (document 962r1). Draft 0.23 including the comments was posted on the server.

The meeting was recessed at 5:05PM.

Wednesday September 21, 2005, 8:00 AM Session

Lee Armstrong convened the session at 8:15AM.

Justin Mcnew was introduced who presented the proposed changes to IEEE 802.11p (doc: IEEE 802.11-05/0990r0).

This presentation closed Action item 25 and 38.

ACTION #42: Provide, as part of the liaison with TC204, additional information that will be included in the WAVE Announcement action frame for Calm (V2V communications). (Knut Evensen)

How is a network discovered without a beacon frame: The WAVE Announcement action frame will include similar information.

What is the advantage of this frame over a beacon frame? There is no specific advantage, however, we do not want to disrupt the existing beaconing mechanism.

Question: Is Action #38 taken over by events? Yes.

Lee introduced Wayne who presented an updated version of the draft standard including the proposed changes for considerations. (Presentation - Doc.: IEEE 802.11-05/0962r1)

Following up on the presentation, Wayne presented the draft including the modifications. (P802.11p_D0.23, August 2005)

Lee asked whether there was an objection to accept the comments raised by Wayne Fisher (Fisher1 – 6)? No objection. Comments Fisher 1-6 accepted.

Fisher/8 is still open and needs to be resolved.

ACTION #43: Resolve comment nr 8 raised by Wayne Fisher. (Wayne Fisher)

Lee asked for a vote to accept comment Fisher/7. Result (12 Yes, 0 No, 0 Abstain)

Make a note in annex K to identify that DSRC is used mainly in North America.

Broady: There should be a disparity in how we describe a specific device. There is probably another solution which is to make sure in the document that we refer to the WAVE mode as appropriate and use a generic term when referring to the device (different from WAVE or DSRC). Is there a term that we can use to identify an 802.11 device?

Knut: We could use mobile device and stationary device as identified in 802.11

DSRC device and WAVE device are changed to Station. Other cases need to be reviewed.

ACTION #44: The naming convention such as for “DSRC device” and “WAVE device” needs to be reviewed. This will impact Calm/1-6 (Knut, Broady)

The meeting was recessed at 10:00 AM.

Wednesday September 21, 2005, 1:30 PM Session

Lee Armstrong convened the meeting at 1:50 PM after the projector and the microphone were installed.

The draft presented by Wayne is to identify what the impact to the draft will be if the modifications presented in the morning session were implemented. Lee discussed that it is clear that based on the discussions, we need another round of comments.

Discussed changes were either made directly to the draft standard or documented in the comments sheet.

The meeting was recessed at 3:30 PM.

Wednesday September 21, 2005, 4:00 PM Session

Lee Armstrong convened the meeting at 4:05 PM.

Wayne Fisher continued with the discussion on the comments. Changes were made directly either to the draft standard or documented in the comments sheet.

Is there an objection to approve the resolution of the comments as discussed? No objection was raised. Approved by unanimous consent.

Yamanoto/1 was discussed and approved by unanimous consent.

The meeting was adjourned at 5:00PM.

Thursday September 22, 2005, 8:00 AM Session

Lee Armstrong convened the meeting at 8:15 AM.

Discussed changes were either made directly to the draft standard or documented in the comments sheet.

ACTION #45: Comment Bobs/9 needs to be reviewed off-line. (BobS, Justin)

ACTION #46: A conference call will be setup to discuss the differences between a BSS, IBSS, and WBSS. (Lee)

ACTION #47: Additional information will be provided in the standard to address the difference between a BSS, IBSS, and WBSS. (Justin)

It was requested whether there were requirements available for the work of 802.11p. These requirements should include the channel model. It was mentioned that the requirements were presented to the group in the first meetings for TGp. This information includes the channel model and is available on the server.

Comment (BobS/21) will be resolved and the resolution is that we wait for Mary Ann's input; which will not be available till January. At this point (in Jan 06) the comment will be resolved.

Straw poll: Lee requested who agreed that the only way to resolve the comment is to wait for Mary Ann's input by January 2006. A majority of the group agreed with this approach.

ACTION (see #48): A format is required for the solution that will be generated by Mary Ann for the channel model. (Dick, BobS, Koga)

There is a separate item on the agenda to discuss the impact on the balloting process.

The meeting was recessed at 9:55 AM.

Thursday September 22, 2005, 10:30 AM Session

Lee Armstrong convened the meeting at 10:30 AM.

Discussed changes were either made directly to the draft standard or documented in the comments sheet.

There was further discussion on action item 48 and it was mentioned that it should allow us to verify the requirements.

ACTION #48: A format is required for the solution that will be generated by Mary Ann for the channel model. The channel format must be provided in such a form that the requirements can be verified. (Dick, BobS, Koga)

Broady moved to strike Japan from table p2 – WAVE regulatory requirement list. (18 favour, 0 against, 0 abstain)

Lee asked to vote to accept the recommended solutions to be part of the next draft (identified in blue in the draft). (15 yes, 0 no, 0 abstain)

There will be an opportunity to review the solutions after this meeting.

Lee asked for a vote for acceptance of the comment resolutions noted in Wayne's working copy (doc 11-05-954-00-000p-tgp-D0.23-Comments+sep21+.xls). (18 yes, 0 no, 0 abstain)

Jerry moved to accept Justin's proposed solution to be included in the next draft. Seconded by Broady. (17 yes, 0 no, 3 abstain)

The new draft of the standard will be distributed on October 14th. Comments need to be back on November 4th. The summary sheet of the comments will be available before the November meeting.

Mary Ann's final report on measurements at 5.9 GHz was distributed on a memory stick.

No new business.

Following teleconference will be set up:

- Review the resolution of the comments, 9:00 AM Eastern time, Friday October 28th

Jason motion was discussed on assigning the WAVE Service capability bit. It was recommended to leave the draft as it is and bring it to the working group at which time the issue will be addressed.

Motion to adjourn. Seconded by Dick.

The meeting was adjourned at 12:30AM.

Closing action items

ACTION # 19, 20 & 21: Measurements explanation asked from Koga – Broady Cash

Background: It was questioned which information was used to derive the requirement for the adjacent channel rejection, Minimum sensitivity, and Alternate adjacent channel rejection in table 20.3.10.1.1. Same question came up for sections 20.3.10.3 to 9. It was mentioned that measurements were performed and that calculations showed that this requirement could be met. It was decided that the available documentation will be made available and will be discussed off-line. A list will be developed on which tests need to be performed in order to verify the requirements. The list will be presented next meeting.

Open: The information needed is still restricted by the government. It is in the review process but hasn't been released yet.

ACTION # 34: Provide test clause comments from OmniAir "Device Certification" perspective – Randy Roebuck

ACTION # 40: Richard Noens and Randy Roebuck to get together to submit new comments on test parameters in clause 20.3.10. – Randy Roebuck, Richard Noens

ACTION # 41: A definition will be provided for message stream and safety message. – Scott Andrews

ACTION # 42: Provide, as part of the liaison with TC204, additional information that will be included in the WAVE Announcement action frame for Calm (V2V communications). (Knut Evensen)

ACTION #43: Resolve comment nr 8 raised by Wayne Fisher. (Wayne Fisher)

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IEEE P802.11
Wireless LANs

TGr Meeting Minutes September 2005 Session**Date:** 2005-09-23**Author(s):**

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Monday September 19, 2005

1:30pm

- Call to order
- Agenda – document 11-05/920r2
- TGr “To do list” document – document 11-05/853r3
- Review operating rules for a Task Group.
- Review IEEE 802 policies and procedures for Intellectual Property.
- Approve minutes from the July session – document 11-05/670r0
 - Minutes are approved unanimously.
- Approve minutes from the Teleconference sessions – document 11-05/841r2
 - Minutes are approved unanimously.
- Discussion on Agenda – Results of the discussion will be updated as document 11-05/920r3
 - Agenda is approved unanimously.
- Discussion on document 11-05/858r1 by Bill Marshall.
 - The only controversial comment is listed as number 97. Jon Edney will be making a submission later in the week.

MOTION: To accept the recommended changes in document 11-05/858r1 and incorporate them into the TGr draft.

By: Bill Marshall

Second: Nancy Cam-Winget

Discussion:

- None.

Result: 16 – Yes; 0 – No; 8 – Abstain. Motion Passes

- Discussion on document 11-05/860r0 by Kapil Sood.
 - There is a reference to the “target TAP” in 7.4.7.1 and 7.4.7.3 that should say “target address”.

MOTION: To instruct the technical editor to incorporate the changes in document 11-05/860r0 into the TGr draft, as well as changing “target TAP” to “target address” in section 7.4.7.1 and section 7.4.7.3.

By: Kapil Sood

Second: Michael Montemurro

Discussion:

- None.

Result: 19 – Yes; 0 – No; 6 – Abstain. Motion Passes

- Discussion on document 11-05/875r0 by Kapil Sood.
 - The wording “need not” means that it may be advertised in the beacon, but must be advertised in the probe response.
 - If probes are not allowed, you do not get fast transitions.
 - If you passive scan, you could issue a probe after you see a beacon. There are some regulatory domains that do not allow active scanning.
 - In older days, the information in the beacons is the same as the probe response.
 - In IEEE 802.11e, the EDCA information element is only available in the probe responses. So TGr is not breaking new ground.
 - This text needs to be normative text. Now it is simply informative text.
 - Clause 7 should only contain frame descriptions, not a description of when to use them.
 - We need a better description of what is meant by the wording “need not”.
 - This document was a clarification on the Key Holder IE.
- Discussion on document 11-05/884r0 by Kapil Sood.
 - Using Option 1 does give you additional key separation. It is more architecturally in line with the existing TGr mechanisms.
 - In Option 2, how do you address the R0 key and key holder? There would need to be some additional protocol changes to make it work.
 - In Option 2, we need to determine how the R1 key is installed.
 - There are more steps involved in getting option 2 to work.
 - Should PSK be addressed by TGr? The general feeling is yes.

STRAW-POLL: Interest in pursuing a recommended option for treating pre-shared keys in TGr?
Result: 27 – Option #1; 0 – Option #2; 0 – Neither;

- Discussion on document 11-05/928r0 by Nancy Cam-Winget
 - The changes in slide 6 overlap with changes in document 11-05/858r0. They are already done.
 - Other time measurements in the standard are in TU’s. They should be expressed in units of 1024 micro-seconds. This proposal keeps them in absolute measurements.
 - Do you need a millisecond precision on a re-association deadline? Is there any race condition associated with re-association?
 - All of the discussion around roaming was in millisecond precision. Nobody would expect to see all bits set. For voice applications, transition time budgets ranged from 15 ms to 50 ms.
 - The IE defined in this document is bound to the establishment of the PTK. We could bind lifetimes to the GTK, for example.
 - The reassociation deadline is defined as the lifetime of the resource reservation and the PTK resources. Milliseconds are the most appropriate time to be used.
 - The behaviour of the timer needs to be described in Clause 8. This document does not cover that description – we will need a new work item on the to-do list.

MOTION: To instruct the technical editor to incorporate the changes in slide 5 of document 11-05/928r0 changing “milliseconds” to “TUs” into the TGr draft.

By: Nancy Cam-Winget

Second: Kapil Sood

Discussion:

- None.

Result: 20 – Yes; 0 – No; 1 – Abstain. Motion Passes.

MOTION: To instruct the technical editor to produce a new draft incorporated the changes that have been accepted by the Task Group.

By: Chris Durand

Second: Johnny Zweig

Discussion:

- None.

Result: Motion passes unanimously.

- Recess until the Tuesday 8am session.

Tuesday September 20, 2005

8:00am

- Call to order.
- Discussion of document 11-05/866r1 by Michael Montemurro
 - The TGr editor may use his digression in positioning the Mobility Domain IE in the Beacon and Probe Response messages.
 - We need to clean up Clause Q in the TGr draft. It will be added to the TGr “To-Do” list document.
 - Element id’s will also have to be added, it is editorial change
 - In section Q.2, change first bullet from SMD-ID to Mobility-Domain-ID

MOTION: To instruct the technical editor to incorporate the changes given in document 11-05/867r0 into the TGr draft.

By: Michael Montemurro

Second: Bill Marshall

Discussion:

- None.

Result: 14 – Yes; 0 – No; 0 – Abstain. Motion Passes.

- Discussion of document 11-05/903r0 by Michael Montemurro
 - This illustrates another problem with the TGr draft. There is no way of changing the R1KeyHolder ID during the 4-way message exchange.
 - We need to clean us 8.5A.8 need to clarify “who” the AP is. It will be added to the “to do” list.
 - You can’t combine this with the Count IE because the FT IE is used in messages where the count does not exist.

MOTION: To instruct the technical editor to incorporate the changes given document 11-05/900r0 into the TGr draft.

By: Kapil Sood

Second: Bill Marshall

Discussion:

- None.

Result: Motion Passes Unanimously.

- Discussion of document 11-05/875r1 by Kapil Sood
 - None.

MOTION: To instruct the technical editor to incorporate the changes given document 11-05/875r1 into the TGr draft.

By: Kapil Sood

Second: Nancy Cam-Winget

Discussion:

- None.

Result: Motion Passes Unanimously.

- Discussion of document 11-05/925r0 by Jon Edney
 - In state 3, you are still connected. However the 802.1X control port is closed.

- The original intention of state 3 is that you are connected and you can pass data to the network.
- TGi describes Authentication as the EAP Authentication; this submission describes Authentication as the 4-way handshake.
- Authentication in this submission refers to both the EAP Authentication and the 4-way handshake.
- Pre-authentication frames are not used for TGr.
- If the STA does not issue the Open Authentication, then the AP knows that the STA is a TSTA

STRAW POLL: Should we prepare normative text to address the three recommendations as presented in document 11-05/925r0.

Result: 19 – Yes; 0 – No.

- Discussion on the “To-Do” list document 11-05/853r3
 - We do not need “come back later”. However that will depend on whether reservation is allowed “over the air”.
 - We’ve defined 802.11r authentication and the reservation messages over the air. There are other issues with “over the air” reservation.
 - FBT state machine for Authentication (item 9). In section 8.5A.9, we define 4 messages. However, we also have a mechanism that involves a 6 message transition. We need to address how the state machine behaves under error conditions (under MIC failures, for example).
 - Extended capability element is not needed at this time.
 - We are defining an Ethertype which implies that we have defined a protocol that will work over the DS. This will address the “over the DS protocol” work item.
 - Kapil Sood will look after key lifetime and PSK.
 - The document will be cleaned-up and posted as document 11-05/853r4
- Discussion of document 11-05/672r4 by Michael Montemurro
 - The text that describes the Ethertype should state that the Ethertype would only be used when the frame is passed over an L2 network. Jon Edney will make a ballot comment to address this topic.

MOTION: To instruct the technical editor to incorporate the changes given document 11-05/672r4 into the TGr draft.

By: Michael Montemurro

Second: Kapil Sood

Discussion:

- None.

Result: Motion Passes Unanimously.

- Recess until the 10:30am session.

Tuesday September 20, 2005

10:30am

- Call to order.
- Discussion on document 11-05/883r0 by Kapil Sood.
 - What is the usage of the TGk Neighbor Report? It is understood that the format is a request/response mechanism.
 - This concept is similar to the Neighbor Report in TGk. You still have to scan to determine the wireless link properties of the access point to get its RF characteristics. It may allow you to reduce the number of channels you scan.
 - This work should really be done in TGk. It should be merged with the neighbor report in TGk.
 - Broadcasting information is more efficient than querying for information. Is all of this information required for making a roaming decision?
 - The TSTA needs an FT IE in order to roam. If you are going to query the TAP anyway, perhaps this query is not useful.
 - This saves the TSTA the work of going off-channel.
 - The TSTA could send the Mobility Domain IE rather than a list of BSSID's.
 - This presentation is a good idea and it should really be done as part of TGk.
 - We need to determine whether the neighbour report would be optional in TGk.

STRAW POLL: Is the group interested in pursuing an approach such as described in document 11-05/883r0 for advertising fast transition policy and service IE's.

Result: 22 – Based on TGk mechanism;

1 – Based on new mechanism;

1 – Work is not worth pursuing.

- Based on this decision, we could prepare text in our document that would modify the work currently done by TGk. If TGk is delayed, we will need to take up more work to introduce the neighbor report.
- We need to work our way through content of the Beacon and Probe Response. That would best be done in adhoc mode.
- Recess into adhoc mode until 2:30pm to work on Beacon and Probe Response content.

Tuesday September 20, 2005

2:30pm

- Call to Order
- Discussion of document 11-05/956r0 by Nancy Cam-Winget
 - The document should be updated to include the conditions under which the IE's should be included for Beacon, and Probe Response.
 - The MDIE needs to be added to the Reassociation Request
- Discussion of document 11-05/966r0 by Nancy Cam-Winget
 - The Fast Transition Request can appear in an Authentication message.
 - These changes may affect other task groups. It simply states that Association messages are able to be generated in state 1. There is no way of addressing this topic without assigning the Association frame to state 1.

MOTION: To instruct the technical editor to produce a new draft incorporated the changes that have been accepted by the Task Group.

By: Nancy Cam-Winget

Second: Frank Ciotti

Discussion:

- None.

Result: Motion passes unanimously.

- Recess until Wednesday at 8am.

Wednesday September 21, 2005

8:00am

- Call to order.
- Discussion on document 11-05/956r1 by Nancy Cam-Winget
 - None.

MOTION: To instruct the technical editor to incorporate the changes given in document 11-05/956r1 into the TGr draft.

By: Nancy Cam-Winget

Second: Bill Marshall

Discussion:

- None.

Result: Motion passes unanimously.

- Discussion on document 11-05/966r1 by Jon Edney
 - None.

MOTION: To instruct the technical editor to incorporate the changes given in document 11-05/966r1 into the TGr draft.

By: Jon Edney

Second: Nancy Cam-Winget

Discussion:

- None.

Result: 12 – Yes; 0 – No; 4 – Abstain. Motion passes.

- This submission did not address first contact. Another submission will be included to address this issue.
- Discussion on document 11-05/819r0 by Kapil Sood
 - This submission only deals with the two reservation messages for the over-the-air BSS-transition.
 - IT policy is required for reservation. Reservation needs to be configured across the network.
 - The purpose of reservation is to ensure that resources are available to a STA when it transitions to a new AP.
 - The AP's have to advertise the Mobility Domain regardless of the reservation or transition mechanism.
 - Eliminating "over-the-air" is a basic principal of 802.11. It's fundamental to how "over the air" is designed.
 - It's not within scope within TGr to address the reservation over-the-DS. The specification of the protocol between the AP's is outside the scope of 802.11.
 - When we say "over the DS", we mean that the STA is sending a frame to its current AP; and the AP forwards the frame to the target AP. We should really use the term "over the external network".
 - We have a bit defined to advertise that "over the DS" mechanisms are supported.
 - The term "over the external network" is a more precise.
 - We have two options for "over the air" and two options for "over the DS". At the moment, the specification is consistent. If you eliminate an option, you make the specification more complex.

- Making “over the air” reservation optional in the standard would satisfy requirements.
- Making “over the air” would be optional for the STA, but it should be mandatory for the AP.
- The only way you could do it would be to force the AP to support both mechanisms.
- It would nice to have a standard without optional features for a change.
- If you have a stable link to an AP that is really slow, and there was another AP available that was lightly loaded; it may make sense to use an over-the-air mechanism to transition to the new AP.
- In an example of a home situation, there may not be a network available to do an “over the DS” reservation prior to transition.
- There are three aspects to this presentation:
 - Is reservation useful?
 - Is “over the DS” better than “over the air”?
 - Should we eliminate “over the air”?
 - The only statement which justifies removing “over the air” is that it is too complex. If you remove “over the air” reservation, you could argue that the standard more complex.
 - “over the air” is no more complex to deploy than “over the DS”
- Removing “over the air” reservation does not decrease the size of the draft.
- “over the air” reservation should be left in to get feedback from the working group in a letter ballot.

STRAW POLL: Is there interest in removing the “over-the-air” reservation mechanism from the TGr draft.

Result: 2 – Yes; 21 – No.

- If you change “Over the DS” to “over the external network”, you will get even more letter ballot comments.
- We always send messages “to an AP”
- We could use the term “over the infrastructure”.
- In section 5 of the 802.11 specification describes the connection between the AP’s as the DS.
- The frames are terminated at the Access Point. So the frames are not transmitted over the DS.
- The message is sent “to” the access point; not “through” the access point.
- The term “backbone” is used by 802.16.
- “over the DS” is consistent with the understanding of the 802.11 standard.
- The message is an “end to end” mechanism because it is MIC’d. Just the transport mechanism changes.

STRAW POLL: Should “over the air” in any way be made optional?

Result: 3 – Yes; 20 – No.

- Annex Q is informative and contains elements of the JIT and TAP proposal that not has been included in the normative text.
 - There are two kinds of sentences: those that are normative and those that are informative. There is no normative text in Annex Q. Annex Q for instance, maps key holder to network components.

- The content of Annex Q is not consistent with the rest of the document. Either we should update it or remove it.
- There is currently a description of the binding of the keys.
- We should remove the current content of Annex Q and request another submission.

MOTION: To instruct the technical editor to remove Annex Q from the TGr draft.

By: Michael Montemurro

Second: Jesse Walker

Discussion:

- This is a technical motion.

Result: 13 – Yes; 0 – No; 12 – Abstain. Motion passes.

MOTION: Section 11.3.1, point (a), change “...the STA shall execute the authentication mechanism described in 8.2.2.2” to “... the STA shall:

- If the Authentication Algorithm is “Shared Key” or “Open System” then execute the authentication mechanism described in 8.2.2.2
- If the Authentication Algorithm is “Fast Transition” then execute the Authentication mechanism described in 8A.2”

Section 11.3.2, point (a), make same change as 11.3.1.

Section 11.4.3, point (a), change “If the state variable is in State 1,” to “If the state variable is in State 1 and this reassociation is not part of a Fast BSS Transition,”

Fix two incorrect cross-references in 11ma D4.0 11.3 and 11.4, from 5.5 to 5.6.

By: Bill Marshall

Second: Jesse Walker

Discussion:

- This is a technical motion.

Result: Motion passes unanimously.

MOTION: To instruct the technical editor to produce a new draft incorporated the changes that have been accepted by the Task Group.

By: Jesse Walker

Second: Nancy Cam-Winget

Discussion:

- None.

Result: Motion passes unanimously.

- Recess until Thursday 8am session.

Thursday September 22, 2005

8:00am

- Call to order.
- Discussion on the “To-Do” list – Document 11-05/853r6
 - There is still a debate as to whether “come back later” is required.
 - We need to decide whether we want to address the state machine changes for First Contact
 - Issues 31 and 8 are the same. They should be combined.
 - The document will be updated as Document 11-05/853r7
- Discussion on document 11-05/997r0 by Bill Marshall
 - None.

MOTION: To instruct the technical editor to incorporate the changes given in document 11-05/997r0 into the TGr draft.

By: Bill Marshall

Second: Jon Edney

Discussion:

- None.

Result: Motion passes unanimously.

- Discussion on document 11-05/1002r0 by Jon Edney
 - If the key lifetime expresses the lifetime for the entire key hierarchy. We need to explicitly state this in the text.
 - We need to define a new key lifetime, which implies the PTK lifetime. We need to decide whether we need two key lifetimes: one for the PMKSA and one for the PTK.
 - If R0 or R1 expire, then the entire key hierarchy expires.
 - You could provision the new PMKSA while you are still using your existing PTK.
 - Currently there is no specification in 802.11 or EAP to communicate the lifetime to the client.
 - We can bind PMK and PTK lifetime; or split PMK lifetime and the PTK lifetime.
 - We transmit the lifetime in the Confirmation key message.
 - If TKIP or AES are comprised, we would have to re-key and generate a new PTK more frequently.
 - When the R1 key expires, the whole key hierarchy must expire.
 - If you have to re-associate to the same access point, you must go through the Fast Transition.
 - As soon as you issue the FT Request to the AP you are connected to, you have to stop sending data with that AP.
 - This condition could occur if the PTK expires.
 - This problem would only occur if there was a separate PTK lifetime from the PMK lifetime.
 - If you split the PMK and PTK lifetimes, then you are essentially in the same state as 802.11i.
 - You should be able to maintain your existing security association while rekeying.
 - This comes from TGw. In those discussions, we were trying to be clean to establish what actions you take when you issue an Authentication or Association.

- When you do an association or re-association, you are coming in new. This implies at least a refresh of the PTK.
- We should discuss whether we could maintain data connection while going through the re-association sequence.
- You could use the replay counter and use the Anonce and Snonce.
- We could alter the way that we protect re-association.
- A successive re-association could use the reply counter.
- The issues addressed in this discussion will be added to the “To-Do” list.
- How does a STA know when to rekey once security has been compromised?
 - If you key has been compromised, how does the STA gain knowledge in a secure environment.
 - This problem it exists today with 802.11i. This item will be added to the “to-do” list.
 - We need to add an action item to change neighbor report. This item will be added to the “to-do” list.
- Discussion on the next steps for TGr:
 - Our plan of record is to put Draft 0.09 for a 30 day Task Group review. We would use the existing letter ballot comment document for collecting comments.
 - After the 30 day review, we would not have time to process comments.
 - We made need an adhoc meeting to address letter ballot comments.
 - We could have a 15 day review and use teleconferences to address comments.
 - We will skip the teleconference on September 28th and have our next teleconference on October 12th.

MOTION: To instruct the technical editor to produce a new draft incorporated the changes that have been accepted by the Task Group.

By: Bill Marshall

Second: Michael Montemurro

Discussion:

- None.

Result: Motion passes unanimously.

- Adjourn until the November plenary session.

**IEEE P802.11
Wireless LANs**

September 2005 Mesh Minutes

Date: 23-September-2005

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Abstract

Minutes of the meeting of the IEEE 802.11 ESS Mesh Networking Task Group held at the Hyatt Regency Hotel in Garden Grove, CA, from September 19th to 22nd, 2005, under the TG Chairmanship of Donald Eastlake III of Motorola Laboratories. Minutes were taken by Stephen Rayment, except for Sessions V and VI, which were minuted by Bahareh Sadeghi. The minutes were edited by Donald Eastlake III. The final Agenda for the meeting is in document number 11-05/838r9. The Closing Report is in document 11-05/1014r0.

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Minutes

Session I, Monday, September 19th, 16:00-18:00, Hyatt Regency Hotel – Grand Ballroom A

The meeting was called to order at 16:01 by Donald Eastlake III - Chair, Stephen Rayment - Secretary, W. Steven Conner – Editor

The Chair reviewed IEEE 802 and 802.11 Policies and Procedures on Intellectual Property and Inappropriate Topics

The Chair explained and reminded all to use the Manual Attendance Recording System for this meeting

The Chair reminded all concerning 802.11 policy restrictions on recording and photographs

The Chair outlined the week's Agenda, per page 3 of document 11-05/838r5

Approved the Agenda by unanimous consent

Approved the Minutes of the July 2005 Meeting, 11-05/715r0, by unanimous consent

Approved the Minutes of the Teleconference held 14 September 2005, 11-05/888r1, by unanimous consent

The Chair briefly reviewed the status of the Task Group

Moved, that the proposals listed in 11-05/597r10 be ratified as valid for consideration at the July and September TGs meetings notwithstanding any procedural flaws under 11-05/274r10.

Moved: Mathilde Beneviste Seconded: Juan Carlos Zuniga

Motion **Passed** For: 44 Against: 0 Abstain:1 (being >75%)

The Chair led a discussion on Presentations and Discussion on Process, using the document “TGs Process”, 11-05/878r0, Donald Eastlake III

There were no questions or comments.

The Chair mentioned the possible interactions between 802.11s and 802.1aq (Shortest Path Bridging) There will be a significant amount of time at the mid-week 802.11 plenary for 802.1/802.11 interaction.

The Chair has agreed to provide some presentation on where we are, perhaps

- 11-04/1477r4: Terms and Definitions for 802.11s

- 11-04/1174r13: Functional Specification and Scope

802.1 will be interested in having a few people who can vote and comment on our Drafts.

802.1aq is meeting 10:30 to 12:00 Thursday [in Royal F].

Technical Presentation #1: “Adjacent channel interference and its impact on the mesh MAC”, 11-05/916r0, Jack Winter

The Chair recessed the session at 16:50.

Session II, Tuesday, September 20th, 10:30-12:30, Hyatt Regency Hotel – Grand Ballroom B&C

The Chair convened the session at 10:31

The Chair reviewed yesterday's accomplishments, reviewed the IPR Policies, reminded everyone to use the manual Attendance system and reviewed the Agenda and structure for this and the remaining sessions.

10:36 Full Proposal Slot A: Mesh DCF (A:8)

"A MAC Partial Proposal for IEEE 802.11s", 11-05/0869r2, Michael Einhaus, ComNets RWTH Aachen University

Questions ensued...

11:52 Partial Proposal Slot B: Mesh Networks Alliance (H:9)

"Mesh Networks Alliance IEEE 802.11 TGs Proposal submission", 11-05/600r2, Guido R. Hiertz, ComNets/Philips

Questions ensued...

The Chair recessed the session at 12:26

Session III, Tuesday, September 20th, 16:00-18:00, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 16:02, reminded about the Manual attendance system, and reviewed this morning's Agenda

16:06 Full Proposal Slot C: Wi-Mesh Alliance (B:31)

"Wi-Mesh Alliance Proposal for TGs", 11-05/573r4, Juan-Carlos Juniga, Interdigital

Questions ensued...

Technical Presentation #2: "Route Discovery Latency in on Demand Routing Protocol", 11-05/881r0, Yeonkwon Jeong

Questions ensued...

The Chair reviewed the Agenda for the remaining sessions.

The Chair recessed the session at 17:37

Session IV, Wednesday, September 21st, 08:00-10:00, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 08:02, reviewed the Agenda and reminded everyone to use the Manual Attendance system.

08:06 Full Proposal Slot D: Proactive Mesh (J:35)

"Proactive Mesh Network Framework", 11-05/0386r5, Bing Zhang et al, NIICT

Questions ensued...

09:22 Partial Proposal Slot E: Common Control Channel (M:22)

"Highlights of the CCC MMAC", 11-05/0904r2, Mathilde Benveniste, Avaya

Questions ensued...

The Chair recessed the session at 10:00

Session V, Wednesday, September 21st, 13:30-15:30, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 13:33, reviewed the Agenda and reminded everyone to use the Manual Attendance system.

The Chair asked for volunteers to fill the secretary role for the session. Only volunteer: Bahareh Sadeghi.

13:36 Full Proposal Slot F: SEE Mesh (G:7)

“Simple Efficient Extensible Mesh (SEE-Mesh) Proposal Overview”, 11-05/0567r4, W. Steve Conner, Intel

Questions ensued...

Technical Presentation #3: “A Security Model for Wireless Mesh”, 11-05/0172r5, Bob Moskowitz

Questions ensued...

The Chair recessed the session at 15:29

Session VI, Wednesday, September 21st, 16:00-18:00, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 16:07, reviewed the Agenda and reminded everyone to use the Manual Attendance system.

The Chair asked for volunteers to fill the secretary role for the session. Only volunteer: Bahareh Sadeghi.

The Chair led a discussion and vote on Teleconferences/ad-hoc meetings

Motion to hold a teleconference prior to November IEEE meeting, 11am eastern US time Wednesday 2 November, as stated on slide 14 of the document.

Moved: Bahareh Sadeghi Seconded: Jon Agre

No discussions. No objections. Motion **adopted** by unanimous consent.

Technical Presentation #4: “Efficient Routing in Wireless Meshes through Late Binding”, 11-05/909r0, Suman Banerjee

Questions ensued...

The Chair adjourned the session at 16:57.

Session VII, Thursday, September 22nd, 13:30-15:30, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 13:33

The Chair reviewed the Agenda for the session.

Five minute summaries of each proposal were presented (numbering per documents 11-05/274r10, 11-05/597r11) (times below are approximate)

- 13:35 Mesh DCF (A:8), 11-05/998r0, Michael Einhaus
- 13:40 Mesh Networks Alliance (H:9), 11-05/788r1, Guido Hiertz
- 13:45 Wi-Mesh Alliance (B:31), Juan Carlos Zuniga
- 13:50 Proactive Mesh (J:35), 11-05/778r1, Bing Zhang
- 13:55 Common Control Channel (M:22), 11-05/1011r0, Mathilde Beneviste
- 14:00 SEE Mesh (G:7), 11-05/567r5, Steve Conner

The logistics for voting were described by the Chair, with the official ballots being given out at the head table by WG Vice Chair Al Petrick, and the TG Chair and Secretary. The completed official ballots were collected at a side table by the WG Chair Stuart Kerry and Vice Chair Harry Worstell. Balloting occurred using the September 2005 TGs Ballot forms with voters being called up by the first letter of their last name from A through Z.

See Appendix below for the results of the balloting.

The Chair adjourned the session *sine dei* after all votes had been cast at 14:30.

Detailed Record

Session I, Monday, September 19th, 16:00-18:00, Hyatt Regency Hotel – Grand Ballroom A

The meeting was called to order at 16:01 by Donald Eastlake III - Chair, Stephen Rayment - Secretary, W. Steven Conner – Editor

The Chair reviewed IEEE 802 and 802.11 Policies and Procedures on Intellectual Property and Inappropriate Topics

The Chair explained and reminded all to use the Manual Attendance Recording System for this meeting

The Chair reminded all concerning 802.11 policy restrictions on recording and photographs

The Chair outlined the week's Agenda, per page 3 of document 11-05/838r5

Approved the Agenda by unanimous consent

Approved the Minutes of the July 2005 Meeting, 11-05/715r0, by unanimous consent

Approved the Minutes of the Teleconference held 14 September 2005, 11-05/888r1, by unanimous consent

The Chair briefly reviewed the status of the Task Group

- 35 intents to submit proposals received
- 15 proposals submitted, presented and balloted in July
- 6 remaining proposals to be presented and balloted at this meeting
- See documents 11-05/112r14, 11-05/274r10, 11-05/597r10.

Moved, that the proposals listed in 11-05/597r10 be ratified as valid for consideration at the July and September TGs meetings notwithstanding any procedural flaws under 11-05/274r10.

Moved: Mathilde Beneviste Seconded: Juan Carlos Zuniga

Motion **Passed** For: 44 Against: 0 Abstain:1 (being >75%)

The Chair led a discussion on Presentations and Discussion on Process, using the document “TGs Process”, 11-05/878r0, Donald Eastlake III

There were no questions or comments.

The Chair mentioned the possible interactions between 802.11s and 802.1aq (Shortest Path Bridging)

There will be a significant amount of time at the mid-week 802.11 plenary for 802.1/802.11 interaction.

The Chair has agreed to provide some presentation on where we are, perhaps

- 11-04/1477r4: Terms and Definitions for 802.11s
- 11-04/1174r13: Functional Specification and Scope

802.1 will be interested in having a few people who can vote and comment on our Drafts.

802.1aq is meeting 10:30 to 12:00 Thursday [in Royal F].

Technical Presentation #1: “Adjacent channel interference and its impact on the mesh MAC”, 11-05/916r0, Jack Winter

The Chair recessed the session at 16:50.

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The Chair convened the session at 10:31

The Chair reviewed yesterday's accomplishments, reviewed the IPR Policies, reminded everyone to use the manual Attendance system and reviewed the Agenda and structure for this and the remaining sessions.

10:36 Full Proposal Slot A: Mesh DCF (A:8)

“A MAC Partial Proposal for IEEE 802.11s“, 11-05/0869r2, Michael Einhaus, ComNets RWTH Aachen University

Questions ensued...

- Delay budget for voice/telephone traffic, in 802.11e characterized QoS traffic should have no more than 10ms delay tolerance per hop, say it's 15-20, which is better EDCA or MDCF?
Data shows queuing plus access, end to end not per hop. EDCA shows better performance
- Packet loss not so important for voice, can interpolate.
- Slide 14, implementation impact of scheme – needs strict bit level sync to work?
Depends on length of slots, which may be impacted by delay spread. Did incorporate this in models.
- Also, clarify contention phase, do you randomly assign?
Not completely defined. Consider distribution function.
- What are m and n in slide xxx?
m is number of energy signals, bits to code priority levels
n is number of bits needed to decode levels of contention, higher m if lower probability of collision
- Delay vs packet loss – not sure EDCA can't perform well, e.g., compare throughput and packet loss given fixed delay?
Here looked at performance compared to industry stated requirements.
- Need to detect overlapping energy pulses. CCA sensitivity -82 is done by correlation in Rx. What happens when two signals are required, then you use -62 Energy Detect. What adjustments if Energy Detect sensitivity is lower?
Needs study
- No PHY change required? Ability to tx and rx an energy signal would be a test mode with many implementations?
- Energy signal – is it a single carrier?
It is a broadband signal.
- Energy pulses can't convey information, e.g., radar. Too unreliable for carrying critical information?
Trade off of short for maximum efficiency, long for reliability
- What happens when overlapping with networks that don't use this?
Won't work, No different than 802.11 and 802.16
- These mitigations won't help when existing BSS networks are operating.

11:52 Partial Proposal Slot B: Mesh Networks Alliance (H:9)

“Mesh Networks Alliance IEEE 802.11 TGs Proposal submission“, 11-05/600r2, Guido R. Hiertz, ComNets/Philips

Questions ensued...

- Slide 11. What is duration of SF and allocation to CFP and CPs.
SF 20-32ms, depends on settings, dynamic allocation to CFP and CP
- When 802.11e PCF had problems with 100ms periods, Here, can mesh and BSS traffic be interspersed at finer scale?

Yes, can change beacon interval. Also note, you can relay throughout CP. Will show delay results in next meeting.

- What happens if beacon traffic overloads network with shorter intervals.
If SF is beacon size – no data, but effect is already modelled in simulation results (eg. 20-23ms SF)
- In particular neighbourhood in CFP period no traffic can go?
But mesh can deliver to final destination
- 20ms superframe (SF), do you divide 50/50?
It's adaptable
- In EDCA can MP tx for 20ms, or do they have to wait?
If you have 100% EDCA, it's just according to standard access scheme
- What about CWMin, only used 3 here, causing lots of collisions for EDCA?
Have done same simulation with best effort, larger CW, results are higher, but need decentralized system to adjust parameters.
- CW (contention window) for best effort is longer than voice, however when all traffic is in one category should use longer window, use DCF contention window?
See Slide 48, simulation used 15 and 1023
- If you increase CWMin, you increase overhead?
We get higher throughput due to spatial re-use
- Could you compare variable bit rate flows, eg. TCP fairness. If one stream dominates mesh can constant bit rate flows convince the TCP flow to backoff?
Since we have segregated mesh traffic can drop traffic from STAs, thus reduce TCP. Didn't model here due to complexities to analyze.
- What info do nodes contain regarding neighbourhood map?
Each contains list of neighbours it can receive beacon from. Also info about what other APs the neighbours see. Also which Tx power level neighbour received at.
- Results depend on info in beacons?
Yes, simulator models info in each node.
- In EDCA have TXOP?
Used 2ms TXOP in simulations
- What's delay / jitter as you go from CFP to CFP?
Also must consider packet loss. EDCA perfect for single hop, breaks down with multiple hops due to collisions. What delay are we measuring – only those that got through, what about re-transmission times, etc.

The Chair recessed the session at 12:26

Session III, Tuesday, September 20th, 16:00-18:00, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 16:02, reminded about the Manual attendance system, and reviewed this morning's Agenda

16:06 Full Proposal Slot C: Wi-Mesh Alliance (B:31)

“Wi-Mesh Alliance Proposal for TGs”, 11-05/573r4, Juan-Carlos Juniga, Interdigital

Questions ensued...

- Original proposal had three modes of MAC. Where are these here?
Trying to emphasize framework to support DRCA function as opposed to three modes. Want to consolidate features not modes

- Given the three – how does dynamic fit?
See backup slide 62 and following slides – Periodic, Dynamic or Shared Coordination Channel modes.
- Happens during mesh traffic period?
Yes, piggy backed on data frame, happens at “first meeting”
- Proactive routing – can configure each MP (mesh point) to proactive or not, should be MP or Portal
Slide 42 – one protocol per mesh not per MP, each MP can see if it wants to join
May be an error in spec.
- Inter-working when more than one Portal, how to handle 802.1d BPDUs?
Can have more than one. Must have unicast and multicast and broadcast. Insertion of MACs or Tree Path. Do it all at lightest weight. Numerous options.
- How to implement all 3 MACS?
- Delay, equiv of CCC is OK , with Periodic (DRC) if you don't get reservation in one period, will introduce extra delay, for Dynamic, similar concern, appointments – schedule for retune could be 10's of msec, introducing delay. Will you use Periodic or Dynamic.
Periodic – Guido gave results, with 20 msec beacons, 10msec per hop
Dynamic – MTXOP defines channel, could be on same channel, only hop if interference, not suggesting specific values – 1 usec and up.
- Multicast routing – double acknowledgement – if forwarding MP with 10 descendants, will you unicast to each individually?
Based on OSPF MANET – in flooding, control traffic for a link state, multicast trees for forwarding. Broadcast tries to flood everywhere, multicast specific. Broadcast - want to use MCDS to reduce flooding, proposal says forwarding is outside standard. Multicast – see slide 45. Flooding goes once, calculation many times, IETF algorithms.
In multicast you calculate interfaces you want to transmit out on. Option to unicast transmit.
- Acknowledgements?
Will work independently of acknowledged or not. Not specifying. Not sure if in or out PAR.
- Slide 43 – this is a new concept?
No. Fisheye was used before.
- Fisheye used to limit scope of dissemination, different use here.
- Overhead in beacon messages?
These are options.
- Newly joined nodes need Fisheye info? Can't you use regular routing info?
Just an option to not waste bandwidth.

Technical Presentation #2: “Route Discovery Latency in on Demand Routing Protocol”, 11-05/881r0,
Yeonkwon Jeong

Questions ensued...

- How is link break detected?
Link Clear notification could reduce times. “Hello” was used in these simulations.

The Chair reviewed the Agenda for the remaining sessions.

The Chair recessed the session at 17:37

Session IV, Wednesday, September 21st, 08:00-10:00, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 08:02, reviewed the Agenda and reminded everyone to use the Manual Attendance system.

08:06 Full Proposal Slot D: Proactive Mesh (J:35)

“Proactive Mesh Network Framework”, 11-05/0386r5, Bing Zhang et al, NIICT

Questions ensued...

- Slide 38, 39 – graph shows throughput drops after aggregation scheme
It’s inverse radio receiver throughput, bandwidth, accumulated throughput @ each
- Distributed, use least used channel, how about scalability with control overhead?
Looked at 32 nodes, OK for that size
- Slide 53 – show capacity improvement of DCA, however changed number of channels
- DCA and PCA common control, in DCA different nodes used different channels at different times, what if on different channels?
Reassignment scheme.
- PCA portal makes decision based on local info, allows what if more than three hops decision making based on other nodes.
Based on OSR info, gets info from whole network.
- Slide 12 – multicast routing, group leader generates number list, how – a rendezvous point? Leader election, etc? What about join latency? Any simulations?
Only basic scheme.
- What if node goes away? RPs which break apart and come together?
Not yet handled.
- Slide 56 – Splitting and recombining – how’s it done, what’s delay associated with it, there are MANET studies on this, healing time? any simulation?
Haven’t simulated.

09:22 Partial Proposal Slot E: Common Control Channel (M:22)

“Highlights of the CCC MMAC”, 11-05/0904r2, Mathilde Benveniste, Avaya

Questions ensued...

- How efficient is protocol, control governs how traffic utilized. What happens if collisions on control channel?
Standard EDCA. Option features to reduce probability of collision, called AIFR, NAV filtering.
Delay results suggest there are not many collisions.
- Works in presence of legacy WLANs, traffic doesn’t follow contention.
Not correct, once secure reservation and tx on traffic, you use EDCA, listen for AIFS, like normal.
- How does mesh station know it has collided, will it double backoff?
Can decide this later. Can double if you like or decrease.
- Multi channel MP and legacy - can only share common channel.
There are no legacy MPs.
- All MPs on multiple channels.
Traffic can be on control, cluster of MPs can use EDCA.
- Support for legacy STA?
Yes can be legacy or EDCA.
BSS traffic should not be on control channel.
Can share MP traffic.
- How many data channels, control 6Mbps, data 24Mbps, 80 bytes RTS/CTS, 1 per data frame – can support 6 data channels of 54Mbps
Would normally have multiple frames per CTS/RTS. MTXOP is frame aggregation. With 1 frame per TXOP, control channel can’t take extra load, throughput increases more slowly. For many applications have much less load.

The Chair recessed the session at 10:00

Session V, Wednesday, September 21st, 13:30-15:30, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 13:33, reviewed the Agenda and reminded everyone to use the Manual Attendance system.

The Chair asked for volunteers to fill the secretary role for the session. Only volunteer: Bahareh Sadeghi.

13:36 Full Proposal Slot F: SEE Mesh (G:7)

“Simple Efficient Extensible Mesh (SEE-Mesh) Proposal Overview”, 11-05/0567r4, W. Steve Conner, Intel

Questions ensued...

- Slide 24: How about routing of 802.11i messages?
The MPs are mutually authenticated. Depending on the authentication scheme distributed or centralized.
What if the authentication server is connected to the portal?
Centralized authentication; starts with MP neighbor of the portal and then neighbor by neighbor the security bubble extends.
Specific example taken offline.
- Why the need for a common control channel?
Allows the devices with only single radio to coordinate on the channel and do the data transmission on different channels. Provides a mechanism for coordination among the devices that have implemented CCF and also a rendezvous place with devices that do not implement this framework.
- Support of multi-cast?
Going back to path-selection framework, the default path selection protocol uses broadcast to allow multicast delivery. The optional protocol includes enhancement to make multi-cast more efficient. In either case it is possible to deliver multicast packets with low complexity, but if there is a specific application with dependency on multicast, then there is the option of implementation of a more optimized multicast solution to be plugged in.
- MP with broadcast message, does it send multiple copies to its neighbors? In CCF?
To some extent it is an implementation choice, but one broadcast message would be sent. The framework provides a notion of coordination window that can be used for broadcast messages, currently being studied through simulations. It is also possible to send unicast messages.
Require some prioritization mechanisms that do not exist in EDCA today.
Independent of that, this is an optional mechanism.
- How to avoid ACI with multi-radio in CCF?
Not specific to this framework. The problem of isolating RF signals between multiple radios is out of scope and vendors are implementing solutions for that. Dealing with multiple radios on one platform is out of scope of standardization process.
- Two comments regarding support of 802.11r and rapid handoff. First, reactive routing algorithm will support that. Second, your headers do not include the ingress/egress information while the routers need to know that and hence you need to flood that information.
The default routing protocol is a hybrid protocol. Possibility of some proactive enhancements for some specific scenarios exists. Regarding the 2nd question: as part of HWMP we are extending the proposal in a way to have the option of having the devices at the edge only keep track
- QoS and robustness are important. On slide 6, is establishing a direct link between two STAs under Mesh possible?

DLS is out of scope of the task group. However, the proposal supports implementation of the mesh functionally on a mesh point that traditionally was a client.

The Chair noted that the allocated time is over and asked if there is any objection to let another question be asked. No objection was raised. Suggestion was made to ask further questions on the reflector.

- Clarification on the proposal intends with regard to multicast.
In the interest of the core functionality defined in the proposal, the current routing protocol, no emphasis on multicast, which can be the default protocol, does not aim to optimize the multicast functionalities.
Protocol allows for multicast/broadcast.
Ongoing discussion in area of multicast and open to further discussion.
Chose the simple rather than efficient part of the PAR.
Multicast application dependent. And optimality requirements different for different applications. It is important that 11s provides a lot of flexibility, but at the end the subset.

Technical Presentation #3: “A Security Model for Wireless Mesh”, 11-05/0172r5, Bob Moskowitz

Questions ensued...

- On slide 10: An example of multicast group that should be separated from mesh is Video streaming. Required by DMCA (Digital Millennium Copyright Act) to be separately accessible from all other nodes. Can be done by an application level security rather than layer 2. Potentially it could be, and you might be better off doing it in layer2.

The Chair recessed the session at 15:29

Session VI, Wednesday, September 21st, 16:00-18:00, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 16:07, reviewed the Agenda and reminded everyone to use the Manual Attendance system.

The Chair asked for volunteers to fill the secretary role for the session. Only volunteer: Bahareh Sadeghi.

The Chair led a discussion and vote on Teleconferences/ad-hoc meetings

Motion to hold a teleconference prior to November IEEE meeting, 11am eastern US time Wednesday 2 November, as stated on slide 14 of the agenda document.

Moved: Bahareh Sadeghi Seconded: Jon Agre

No discussions. No objections. Motion **adopted** by unanimous consent.

Technical Presentation #4: “Efficient Routing in Wireless Meshes through Late Binding”, 11-05/909r0, Suman Banerjee

Questions ensued...

- Are RTF messages required for every packet?
Yes, but considering coherence time it can be done for multiple packets.
- Comment on the mismatch in timescale between link-quality and cost definition.
Cost computation is based on a longer time scale. But the path selection is done based on the short time scale behaviour. It is efficient given that cost computation is expensive.
- Is cost(?) definition per link?
Yes, specific to each link - loss rate, data rate, both are link specific

- In slide 22: Alternative paths might not have a better path depending on who manages to send RTF first?
Minimal requirement on RTF messages is that it is only sent by nodes that can improve the cost.
- If a node does not hear RTF and CTF, does it keep sending RTF?
RTF is sent only once.

The Chair adjourned the session at 16:57.

Session VII, Thursday, September 22nd, 13:30-15:30, Hyatt Regency Hotel – Grand Ballroom A

The Chair convened the session at 13:33

The Chair reviewed the Agenda for the session.

Five minute summaries of each proposal were presented (numbering per documents 11-05/274r10, 11-05/597r11) (times below are approximate)

- 13:35 Mesh DCF (A:8), 11-05/998r0, Michael Einhaus
- 13:40 Mesh Networks Alliance (H:9), 11-05/788r1, Guido Hiertz
- 13:45 Wi-Mesh Alliance (B:31), Juan Carlos Zuniga
- 13:50 Proactive Mesh (J:35), 11-05/778r1, Bing Zhang
- 13:55 Common Control Channel (M:22), 11-05/1011r0, Mathilde Beneviste
- 14:00 SEE Mesh (G:7), 11-05/567r5, Steve Conner

The logistics for voting were described by the Chair, with the official ballots being given out at the head table by WG Vice Chair Al Petrick, and the TG Chair and Secretary. The completed official ballots were collected at a side table by the WG Chair Stuart Kerry and Vice Chair Harry Worstell. Balloting occurred using the September 2005 TGs Ballot forms with voters being called up by the first letter of their last name from A through Z.

See Appendix below for the results of the balloting.

The Chair adjourned the session *sine dei* after all votes had been cast at 14:30.

Appendix: Balloting Results

After adjournment, the ballots were counted and cross checked by Stuart Kerry, Harry Worstell, Al Petrick and Donald Eastlake. The results, as announced at the 802.11 Plenary the next morning, were as follows:

Rank	Proposal	Yes	No	Abs	Yes Ratio
1	G SEE Mesh	84	17	3	82.84%
2	B Wi-Mesh Alliance (WiMA)	49	34	21	58.93%
3	H Mesh Networks Alliance	29	53	22	35.54%
4	J Proactive Mesh	24	62	18	28.16%
5	M Common Control Channel	13	75	16	15.17%
6	A Mesh DCF	8	67	29	11.18%

As per the process in 11-05/274r10, those proposals with a Yes Ratio ranking in the bottom third are eliminated except that they may merge with other proposals.

**IEEE P802.11
Wireless LANs**

Minutes for the Task Group T September 2005 Session

Date: 2005-09-20

Author(s):

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Abstract

This document contains the minutes for the 802.11 TGT meetings during the Garden Grove 802.11 Interim session.

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Tuesday 2005-09-20

TGT chair, Charles Wright– calls the **meeting to order** at 8.00am.

Chair reads through standard policies, i.e. patent policies, Letters of Assurance (LOAs), anti-trust policies, attendance logging and attendance credit

Chair reads meeting objectives.

Marc Emmelmann volunteers to act as an interim **secretary** for this meeting.

Chair provides an **update on progress since San Francisco meeting** (05-937r0 slide 8)

A lot of comments submitted but only partially discussed during telecoms. Focus was rather on how to proceed to get the draft completed. A flow chart regarding the procedure is submitted (05-912r0) and will be discussed during the week.

Chair presents proposed agenda (05-937r0 slide 9):

Agenda accepted as shown without objections

Approval of telecon minutes:

Minutes of telecons since San Francisco meeting (05-0736r0 and 05-911r0) are accepted without objections

Call for presentations:

1. 11-05/874r0, “Methodology metrics and test cases measuring FBT performance”, Sangeetha Bangolae
2. 11-05/950r0, “Methodology metrics and test cases measuring BSS Transitions performance”, Chris Trecker
3. 11-05-943r0, “Conducted power and sensitivity measurements”, Michael Foegelle
4. 11-05-944r0, “OTA TRP and TIS testing”, Michael Foegelle
5. 11-05/887r0, “Video Testing Strategy”, Philip Corriveau
6. 11-05/758r1, “ACI Test Methodology”, Dalton Victor
7. 11-05/951r0, “Steaming Video Performance”, Fahd Pirzada
8. 11-05/941r0, “Latency sensitive application metrics”, Sangeetha Bangolae

Presentations will be given as soon as presenter indicates to chair to be ready to present.

Modified Agenda reflecting announced presentations (05-937r0) accepted without objections.

Discussion of Process Document 05/912r0

<Charles> Recent telcos revealed that TGT was rather interested in moving on to produce a draft than going through every line of the draft version based on the current “issues list”.

This should be done when draft evolved further.

Comments on the evolving draft should be kept in an “issues list”

Charles presents “three step process”. (11-05/912r0 initially, revision 1 created during the meeting)

<Shlomo> Should have more than a 75% vote by TGT on Draft before submitting it to WG letter ballot. Typically, even during WG and sponsor people, there are not sufficiently enough people to technically review the draft. Compromises should be worked out before in order to submit a technically sound draft.

<Charles> Tom and I will jointly maintain the issues list. Comments and further remarks to be included in the “issues list” should be mailed to Tom to be included in the issues list. Alternatively, there is always the possibility to make a formal presentation on the issue.

<Marc E> Comments should also be mailed to TGT-reflector.

<Mark K> How does the informal review process work?

<Charles> You read the draft and provide comments.
We will discuss the details on the process when we start the review process during session.

Marc E raises concerns that proposals will get voted in the draft even though they might not be technically sound as people might argue that there is always the chance to further include things by commenting via the “issues list”.

<Charles> There is formally no way to deal with this.
If the group wants to have drafts included in the draft, the only way to raise (technically) concerns is to vote NO and provide comments. Nevertheless, these comments will come back to the group during WG letter ballot.

<Tom> Bring up technical concerns during discussion of “issues list”.

<Charles> When do we consider the draft to be “complete”?

Apart from pending proposal submissions according to the “stuckee list”, there are other topics to include.

New items that still have to be covered (in addition to 05/912r0 slide 11) in order to make the draft complete:

- Link layer metrics, Tom Alexander
- Video performance metrics, Tom Alexander
- Theoretical throughput limits, Larry Green
- Interference Modelling? May drive an ACI measurement technique.

<CC> Should a model dealing with interference be included?

<Charles> No. This is rather done in P1900. But if such a model helps in defining a metric on how to measure interference, it could be considered and a corresponding measurement technique could be considered.

MOTION:

Accept the process describe in 05-912r1 as the plan of record for TGT going forward.

Mover: Larry Green

Second: Don Berry

Yes: 12 **No: 0** **Abstain: 0**

Discussion on the motion:

<Dalton> Do comments (issues list) have to be (formally) resolved?

<Charles> No, as this is not a formal letter ballot procedure. People may provide comments, talk to proposal authors directly, etc. The only purpose is to avoid a formal and lengthening comment resolution phase.

Question called, no objections.

Timeline of TGT

Discussion of timeline (http://grouper.ieee.org/groups/802/11/802.11_Timelines.htm).
See also 05/937r0 on Official TGT Timelines

<Charles> Is it realistic that Step 1 of accepted process (05/912r1) can be completed after January?

<Shlomo> Timeline is too aggressive. We might have new presentations on new metrics in November which are possibly revised and presented again at the January meeting.

<Sasha> It might take several sessions to put additional proposal text into the draft.

Shlomo points out, that this is only a tentative schedule not restricting TGT from further delaying the end of step 1. Chair agrees.

TGT requests chair to update the timeline to have WG LB in July 2006. Shift other dates in milestones table accordingly.

TGT in recess at 09.58 until 10.30am

Chair calls TGT to order at 10.31am

Presentation “Conducted Power and Sensitivity Measurement” (05/943r0), Michael Foegelle

<Fahd> Why variable attenuator?

<Michael> Avoid overdriving the DUT. Attenuator is NOT varied during the measurement. It can be replaced by a properly dimensioned (constant) attenuator.

<General discussion> Methodology should not explicitly specify *how* to make the DUT transmit at a given data rate. It should only require packets to be transmitted at a given rate.

Question from the group towards accuracy.

<Michael> Overall accuracy of imposed attenuation is around 1.5 dB.

<Tom> Signal level is bouncing within this accuracy and is not stable which might cause additional effects.

- <Dalton> The reported throughput in the slides is higher than theoretical throughput [at MAC level]?
- <Michael> This is not above MAC throughput.
- <Shlomo> Missing in presentation: Error Bars around each discrete measurement point.
- <Charles> Request to mark the data points if discrete measurements are presented in a continuous curve.
- <Charles> What has been presented is not MAC throughput. It should be clear in the presentation that this is PHY throughput. This difference is crucial and should be further discussed.
- <Charles> It is good to define the baseline measurement in conductive environment as further OTA test might reveal effects of antenna etc.
- <Charles> What are the metrics considered?
- <Michael> Transmit Power, Receiver Sensitivity
- <Shlomo> How reliable is the proposed test?
- <Michael> Depends on the used test equipment. Vendors of test equipment have to assure accuracy of results measured with their equipment.
- <Sasha> Even though the results of this metric can predict MAC throughput, it should not replace other tests e.g. UDP-throughput analysis.
- <Fahd> Need to specify / request confidence interval of reported results.

Discussion of “Issues List” (05/0868r0)

- <Dennis> Major concern of comments towards placing measurement equipment in a shielded enclosure is common mode emission from the traffic generator.
- <Charles> we need to have a common section describing these issues as specifying them in each methodology is redundant.
- <Dennis> Would like the equipment used to be “NIST-traceable”.
- <Fahd> Are the specific reporting requirements in the draft enough or should they be further detailed.
- <Charles> Only those parts of a measurement setup that directly relate to the metric to be measured with a high precision needs calibration should be detailed.
- <Marc E.> We should always have a baseline including spec of parameters which influences results.
- <Charles> Entirely agree. The more question we can answer, the better the standard is. If it is too vague, it is open to misinterpretation.

TGT in recess at 12.24h until 16.00h

Char calls TGT to order at 16.03h

Discussion of “issues list” in an ad hoc session

- <Charles> indicates that members preferred to work in an informal ad-hoc session to discuss the “issues” list.

Membership agrees on this.

Presentation “Data-oriented Usags Proposal for TGT” (05/969r0), Fahd

- <Michal> Good approach to clarify which metrics are relevant for which usage case
- <Tom> 802.11 main standards has a similar “informative” section. Very useful.
- <Fahd> Is this approach a good idea?

General opinion that this approach should be followed to become an informal section.

<Tom> Should people submitting metrics indicate where they fit into this classification

<Fahd> Yes

<Charles> Where would Michael's metric fit in there

<Fahd> Everywhere.

<Charles> So we should have a "generic" section required for metrics that apply for all usage cases.

<Fahd> agreed.

<Dennis> Should this section also include a list of equipment need for measuring the metric? This would be nice having from an end-user's perspective.

<Charles> We need a section in the draft which specifies how to validate the test equipment. But this is rather technical and should not be included here. Topic will be added to issues list.

Group asks Fahd to presume and present text that could be included in the draft.

TGT recesses at 4.45pm until tomorrow 1.30pm.

Ad-Hoc Groups may meet to informally prepare resolution of comments in the "issues list"

Wednesday, 2005-09-21

Chair calls TGT to order at 1.30pm

Agenda modified to represent order of presentations to be given.
No objections.

Presentation “Video Testing Strategy” 05/887r0 , Philip Corriveau

- <Mike> How would the presented procedure would flow into a test that can be implemented in TGT?
<Philip> Unsure so far. Goal of was this presentation was to find out what TGT needs.
<Charles> Actually TGT would like to see what GED needs, e.g. packet loss, delay, throughput, etc.
Are there thinks, e.g. packet loss pattern, that can be correlated with the presented evaluation?
<Philip> Yes. GED tool can take link layer statistics to produce “video quality” evaluations.
<Michael> Problem: eventually devices will directly go from chipset to video stream output. Thus, there might not be a possibility to put “test equipment” in the middle.
<Philip> There are capturing devices which can be used instead.
<Sharam> Is this tool a real time implementation?
<Philip> No. Need to capture and do offline processing
<Sharam> Is a special protocol needed to conduct the test?
<Philip> No. Test data are encoded within the video. The video is transmitted using standard methods.
<Charles> How does the GED relate to 802.11 work. Is there interaction between the metrics we measure and your GED model?
<Philip> Yes. The goal is to come to a stage where you can feed TGT measurements into the GED model and predict perceived video quality results.
<Charles> How can we help people measuring end-to-end application performance (video) without measuring link level metrics? So far we are only link layer based. Are there special wireless conditions that we have to define to help measure such things?
<Kevin> We should measure link layer specifics. The role of this group though could be to find out what parameters have to be measured in order to feed them in a model such as the GED.
<Charles> Statistics that are needed might be far more complex than simple average. For video, there requirements are not well known (as compared, e.g. to the e-model in voice).
<Pratik, Charles, Fahd> Should standardize the metric, not the tool.
<Mike> Should look at the metrics we have currently for voice to see if they are useful.

Presentation “Test Methodology, Metrics and Test Cases for measuring BSS Transition Performance” 05/950r0, Chris Trecker

- <Mike> Is the metric measuring the same thing at the STA and the DS as indicated in slide 9.
<Chris> Reason for measuring at the DS is showing latency variations as well.
<Sageetha> It should be noted that the first acknowledged data frame is considered for the measurement.
<Sasha> How to detect last transmitted frame?
<Chris> It’s followed by a probe request.
<Shlomo> asks for the confidence interval and resolution of measurement.

Chair steps down for discussion

Intense discussion on how to specify sweep time and if specifying the minimum and maximum attenuation is necessary.

<Shravan> Please specify the sweep function and rate of the imposed attenuation.

<Charles> Actual values of min. and max. attenuation are not relevant as long as the min is low enough to result in a BSS transition.

<Marc E> Specifying the sweep time and the way it is changed, e.g. linear in dB or otherwise, is important. Results are affected by different sweep times etc.

Charles resumes as Chair

Presentation “Latency sensitive application metrics” (05/941r0), Sangeetha

<Charles> Wait until TGr progresses further before incorporating this into the draft.

<Sasha> We have two presentations. Do we have two proposals?

<Sangeetha> No. It is one proposal text.

<Pratik> This is fine. It can procedurally be one proposal document.

<Charles> We have a problem as we might standardize something that has not been ratified In TGr so far. We are, due to the PAR, only committed to include work up to TGk. Others may be considered as well. Thus we can consider TGr’s work but have to be careful to include it into our draft before it is ratified by TGr.

TGT in recess at 3.27pm until 4.00pm

Chair calls TGT to order at 4.03pm

Presentation “ACI Interference Methodology” 05/758r1, Dalton V.

Request to clarify function of circulator:

<Dalton> Function of circulator to isolate jammer.

<Charles> The presented block diagram is a superset of all presented metrics. It might be clearer to have one block diagram for each test.

<Michael> Drawing might be simplified if attenuators can be combined.

<Charles> Diagrams should not have “test controllers” in it.

<Sasha> Disagrees.

<Dan> Need to specify the components used for the RF-junctions.

<Dalton> We are only specifying the schematics and not detailing the components.

<Charles> We should specify it in order to have people measure metrics the right way.

<Fahd> Should specify the overall path loss regardless of the value for each single RF-junction.

<Charles> Nevertheless we should classify the “kind” of each component used (e.g. circulator, combiner, etc.). Not necessarily the attenuation for each of them.

<Charles> Should include another metric: “generalized interferer”. Please clarify how metrics b and c are different.

<Dalton> In c, the might be interference at MAC level.

Motion:

Move to instruct the editor to incorporate the text contained in document 11-05/759r1 into the TGT draft.

Moved: Dalton Victor
Second: Fahd Pizada
Yes: 10 83%
No: 2 17%
Abstain: 5

Motion passes the 75% requirement as a technical vote.

Discussion:

- <Michael> Not comfortable to vote something that as just been put on the server even though is it has been there obeying the time limit.
- <Charles> Would prefer to see the motion tomorrow during the day and to consider the just discussed concern, e.g. regarding the graphics, in the text.
- <Fahd> Presentation has been given in July meeting and changes to the draft that has been presented at this time are minor. Comments that have been received so far have been considered. We can always modify the draft by providing comments to the "issues list".

Questions called by Mark K. No discussion on calling the question, no objection.

Presentation "OTA TRP and TIS Testing" 05/944r0, Michael F.

<Charles> Does the TRP corresponds to the basic averaged EIRP?

<Michael> Conceptually yes.

<Tom> What about diversity effects?

<Michael> We rotate the DUT and wait a certain time before taking measurements.

<Charles> You run a certain amount of traffic before measurements?

<Michael> Constantly run traffic.

<Charles> We need some way to characterize the diversity algorithm separately. So far, it is an antenna test.

<Michael> Problem that has to be resolved: How to disable diversity. (a) disable all but one antenna via the driver, (b) measure near sensitivity? ...

<Dalton> A similar methodology has been accepted into the draft ...

<Michael> ... this doesn't mean it cannot be changed.

<Fahd> APs are very likely to be mounted on top of ceiling. Thus whole spherical data might not be relevant.

<Dennis> For an enterprise situation, the whole spherical date is relevant.

<Tom> What about the significance of results if rotating the DUT changes the results dramatically?

<Michael> That's the lack of other methodologies which keep the DUT in a constant position and why this presentation was given.

TGT recesses at 5.55pm until Thursday 1.30pm.

Thursday, 2005-09-22

Chair calls TGT to order at 1.35pm

Reminder to sign attendance sheet.

Presentation “Streaming Media Performance” 05/951r0 Fahd

Discussion on used tools.

<>Are there actual performance metrics definitions that are shown later?

<Fahd> Yes?

<Shlomo> Do you have a definition of those parameters that you measure?

There is confusion on the graph on slide 12.

<Fahd> Even though bandwidth per video goes down if several video sources are present, quality is acceptable if QoS is turned “on”. It is always unacceptable if QoS is turned “off” even though available bandwidth (per stream) is higher.

<Fahd> As this is OTA, we cannot differentiate the packets. We can only determine the amount of video traffic by monitoring received video.

<Michael> We have to evaluate how low level metrics relate to the perceived quality.

<Fahd> That’s exactly the missing piece.

<Shlomo> Definition of metrics used in presentation is missing.

<Charles> It would be nice to specify the low level metrics that can get fed into the metric. E.g., slide 13 gives an example (throughput). This is caused by loss; other i.e. delay might have an influence as well. If we know the characteristics of these metrics while having a look on your perceived quality metric, would be of great benefit.

<Mark K> The kind of video that is transmitted has an influence on the results.

<Fahd> That’s right. We have to define a “workload” including several video types.

<Charles> We can only focus on an average quality. E.g., the voice call e-model does not distinguish between silence or transmitting words either.

<Fahd> We do neither define the workload nor the stack, just the requirements to obey when putting these things together.

<Dan> Apart from metrics, be also aware of test case and test scenario. Results from a 1-client-scenario will mislead end-users expecting a system to work with several clients.

Presentation “Latency-sensitive Applications metrics” 05-949r0 Sangeetha

<Fahd> Some of the metrics mentioned were covered by Tom’s presentation if they are targeted at both, the AP and client side.

Discussion that for end-users, the AP capacity (e.g. number of calls it can handle) is extremely interesting.

Modifiers / Conditions should include:

- ◆ Call capacity
- ◆ Call quality
- ◆ PHY rate

<Dennis> There has to be a very strict baseline experiment to guarantee comparable results.

<Dan> The stricter the parameters of the baseline are specified, the harder it might be to conduct the experiments as DUTs might implement proprietary optimization algorithms which cannot be turned off.

Comments from group that we have to define a baseline for each metric including a parameter list. It's still open on how that should look like or can be accomplished.

Presentation “Near Horizon Partial Solid Angle Metrics” 05/1009r0 Michael

<Charles> An entire 3-d measurement of the antenna characteristics might be too much but reporting results, e.g., at the angles mentioned in the talk could be useful for network planners.

<Dan> Even for end-users, understanding the entire antenna pattern is needed.

<Michael> You still have to measure the whole pattern. This is just one simplified example on how to present results.

<Tom> The angular spread cannot always be considered to be so small. E.g., devices might be close together with an object in the LOS path.

<Tom> Vendors use benchmarks to improve DUTs performance. According to the presentation, vendors might use rather directive antennas spreading out energy mainly horizontally. This might not what we want to see. We would like to have more isotropic-like antennas.

Old Business

None

New business

Revised TGT Timeline according to Tuesday's discussion presented by Charles

Planned telcos, 12 noon EST

- ◆ Oct. 6
 - Larry Green to discuss form theoretical limits
- ◆ Oct 20
 - Possible discussion of revised draft
- ◆ Nov 3
 - Intention to propose formal metrics / methodology proposals to the group for approval into draft during November meeting.

Motion:

Empower TGT to hold telecoms on Oct 6, Oct 20, Nov 3 2005, 12 noon EST

Mover: Larry Green

Second: Mark Kobayashi

Yes 9 No 0 Abstain 0

Discussion:

<Shlomo> Could we move the telco to another day?

General disagreement in the group expressed in discussion. A lot of the members have arranged their schedule according to the Thursday meeting schedule we had for the last years.

Dalton moves to adjourn, Fahd seconds. No discussion, no objections.

TGT adjourns at 3.54pm

**IEEE P802.11
Wireless LANs**

TGu Minutes for September 2005 Session

Date: 2005-09-23

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Abstract

Minutes for the TGu sessions of the IEEE 802.11 interim meeting during the week of 19th – 23rd September 2005 at Garden Grove, California, USA.

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Executive Summary:

Documents discussed:

1. Latest Draft Requirement Document 05/822r3
2. Motions regarding requirements and results 05/643r4
3. Generic liaison letter to external groups 05/960r1
4. Response to 3GPP E911 liaison letter 05/988r0
5. Updated timeline document 05/049r4
6. TGr Requirements 05/866r1
7. QoS in WLAN interworking 05/721r0
8. Discussion on TGu requirements from 802.21 05/897r0
9. Redefining SSID 05/971r0
10. Network Selection 05/870r0 & 05/1006r0
11. Service Access Context 05/898r1
12. MIS Protocol 05/859r0
13. 802.11u Proposal 05/850r4

12 motions were raised during the sessions. Two liaison letters were discussed and approved.

Chair: Stephen McCann

Secretary: Hong Cheng

1. Monday Morning Session: (19th September 2005, 1030 - 1230)

1.1 Meeting called to order by the chair at 10:30

1.2 Review of the IEEE 802 and IEEE 802.11 policies & procedures (05/890r1)

Chair went through the policies and procedures. Chair went through the patent ruling from PatCom.

1.3 Approval of the July 2005 minutes (05/817r1)

The minutes were approved by unanimous consent

1.4 Approval of Agenda (05/890r1)

-Comment: The MIS presentation title is "MIS Protocol". The document number is 05/859. Will update the document and upload it later.

-Comment: The 3GPP item should be removed since it is already covered under another agenda item.

- Comment: The document number for the "Service Access Contexts" is 05/898r0.

- Comment: The document number for TGr requirement is 05/866r1.

The agenda is updated to 05/890r2, and is approved by unanimous consent.

1.5 Approval of July 2005 Ad Hoc Session Minutes (05/818r0)

The minutes are approved by unanimous consent.

1.6 Review of July 2005 TGu session (05/797r0)

Chair went through the closing report for last TGu session.

1.7 Approval of Teleconference Minutes**1.7.1 First Teleconference minutes in August (05/837r0)**

The minutes were approved by unanimous consent.

1.7.2 Second Teleconference minutes in August (05/851r0)

The minutes were approved by unanimous consent.

1.8 TGr Requirement (05/866r1), Mike Montemurro

- Comment: TGu is not dealing with mobility.

- Chair: One of our outstanding requirements is to looking into an identifier to advertise either Layer 2 or Layer 3 handovers, e.g. router, accessibility. This is for mobility. It is in TGu since at this time, only TGu can provide this kind of capability. So, although we are not a group dealing with mobility, we may work on this requirement.

- Comment: It is an outstanding requirement. We haven't decided on its category yet.

- Chair: Yes

- Comment: Is this for the terminal based handover?

- Comment: Yes. This is to be advertised by the AP when the AP can be connected. The handover is terminal driven.

- Comment: It is good to also look at the network driven handover.

- Comment: Network initiated handover is more for the cellular world. In IEEE 802.11, it is more user-driven. So, some techniques may not apply.

- Comment: Some procedures could still be reused.

- Comment: Has this presentation been made to IEEE 802.21? Is there any comment from them?

- Chair: We will see that on Wednesday.

- Comment: TGr is about BSS transition (within an ESS). It is different from IEEE 802.21.

- Comment: In TGr, we are relying on TGk to provide information about where to roam.

- Comment: Is this information (of domain) static or dynamic?

- Comment: It is static to be advertised by the APs.

- Comment: Who assigns the value? Operators?

- Comment: This is not yet discussed in TGr. Could bring that up in TGr sessions.

- Comment: Is that a management configuration or a protocol thing?

- Comment: It is to be controlled in the management.

- Comment: Is it provisioned by the operator?

- Comment: Not yet decided how the value is assigned. Now, it is about providing the mechanism to support it. Intension is to provide a compact way to advertise the information than using the beacon.

- Comment: Is this like the SSID?
- Comment: SSID is not reliable. This is to indicate that the APs are reachable over the DS.
- Comment: When APs has the same SSID, does it mean they are in the same domain?
- Comment: No. If there are routers involved, they are not in the same mobility domain.
- Comment: Are the BSS within the mobility domain reachable over the DS?
- Comment: Yes. That is according to the TGr draft.

Move to the outstanding requirements of the d16M2 in 05/279r16

- Chair: Is requirement d16M2 covered by what is presented? If yes, we can handover it to TGr. We will come back to this issue later when discussing the requirements documents.

1.9 QoS in WLAN Interworking (05/721r0) Hong Cheng

- Comment: The control plane aspect is covered by the authorization information related requirements.
- Comment: There are some mapping works in IEEE 802.1. Some issue raised could be brought to the Wireless Architecture group.
- Comment: Some aspects, e.g. the TSPEC, specific mapping is not general for the whole IEEE 802.

- Comment: What do we need to do with the DS QoS other than what IEEE 802.11e has specified?
- Comment: It is the interface with the question mark that may be needed for the control information exchange.

- Comment: 3GPP has discussed about this, and IETF has a mapping scheme also. But, IEEE 802.1 is not satisfied with these mappings, and now in discussion with those groups.
- Comment: The mapping does not need to go through the IP layer.

1.10 Discussion on TGu requirements from 802.21 (05/897r0) Wolfgang Groeting

- Comment: Requirement R1E1 is talking about enrolment, not authentication.
- Comment: The enrolment defined in TGu may be different from what IEEE 802.21 is talking.

- Comment: About the interworking service advertisement, is IEEE 802.21 going to define all the services? For TGu, there is an important point about the level of interworking. It is not listed here.
- Comment: In IEEE 802.21, it is still under discussion.
- Comment: That information is important to the interworking with 3GPP.

- Comment: When IEEE 802.21 goes to the solution space, will there be divergence in the two groups, e.g. the cost advertisement?
- Comment: There might be more discussion in IEEE 802.21, and more details will be defined.
- Comment: How about layering. Would this be placed in beacon or higher layer, e.g. Information Service (IS) in IEEE 802.21.
- Chair: In TGu, we haven't approved any IEEE 802.21 related requirements yet. The link cost, it is just a Boolean value. But we have decided on that yet. In TGu, we are trying to it simply. There is a possibility that the two groups may diverge.
- Comment: We are limited to Layer 2 by our scope. So, we have to solve it within Layer 2.
- Chair: We expect some debates between TGu and IEEE 802.21 to make sure that the solutions would not conflict.

- Comment: Procedurally, how is that done?
- Chair: We haven't formally approved the IEEE 802.21 related requirements yet. In IEEE 802.21, requirements related to different layer 2 media will be defined. Those will be approved by IEEE 802.21 WG. Delegates from IEEE 802.21 will then bring that to TGu. We will wait to see what they have. Another choice is that we approved what we think is required by IEEE 802.21, and check it later when IEEE 802.21 requirements come. So far, we are thinking of postpone the IEEE 802.21 related requirements for later this week.

- Comment: When a comment is scope, someone is expected to bring in a proposal. Even though something is in scope, we don't have to do that here. For example, if some other group is working on it, we can pass to them.
- Comment: Some IEEE 802.21 requirements expect information elements passed out from IEEE 802.11. We can keep all the requirements in, and see if they are done there.
- Comment: Any document at this point of time is not binding to the TGu. The task group can change them later.

- Comment: Are there any information elements that are not covered?
- Chair: Seems that the IEEE 802.21 is defining a super set, and TGu will provide a subset with regarding to the IEEE 802.11.

1.11 Requirement discussion (05/279r16, 05/643r3)

- Comment: Document 05/822 contains all the accepted requirements.
- Comment: The notes in 05/822 have been added to explain the requirements in more details. They are not part of the approved requirements.

1.11.1 Discussion of Requirement d16S2.

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to "Required".

- Define how the Authorization Information (defined in R1S1) will be used by the 802.11 AN.
 - Comment: Wondering if this should be saying "enforced by the MAC".
 - Comment: Are we talking about specific services that are run by the user after authentication?
 - Comment: This is just an information blob coming back from the SSPN that tells what the AN should provide to the user.
 - Comment: Once get authenticated, the user can run different services, e.g. VoIP, web browsing, etc. Do we need to do this for each of the services, or just the access?
 - Comment: It is about the access control, e.g. QoS level. It is about the actual higher layer service types.
 - Chair: We need some clarification for that.
 - Comment: Is that the authorization for the access or the higher layer service?
 - Comment: It is the MAC service authorization, e.g. the user is allowed to use the (IEEE 802.11e) AC3 service.
 - Comment: Is that also about the security level, etc.
 - Comment: This information comes down at the end of authentication. It is too late to decide on the type security level then.

- Comment: We cannot clarify it in this motion, since it is referring to the requirement R1S1. We can expand the notes in R1S1 to clarify that.

Some modifications to the motion text were suggested.

- Comment: Requirement S2 needs to be same as R1S1. It needs to reopen requirement R1S1.
 - Suggest putting that at the end of agenda.
 - Chair: Will do that later this afternoon.
-

2. Monday Afternoon Session (19th September 2005, 1330 - 1530)

Meeting called to order at 13:30.

2.11 - Requirement discussion continued (05/279r16, 05/643r3)

2.11.1 Discussion of REQ d16S2

Modification to the suggested motion text discussed.

Motion 1:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Required”.

- Define how the information defined in R1S1 will be used.

Proposed: Mike Moreton

Seconded: Sabine Demel

Result (for/against/abstain): 8-0-3

Motion passed

2.11.2 Discussion of REQ d16S3

Suggested motion text on REQ d16S3:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Optional”.

- Define functionality by which the Authorization Information described in REQ d15S1 can be modified by the SSPN.

- Comment: It should be out of scope. It is about the behavior of the AAA server. If it is about the changes to the MAC, it is already covered in requirement S2.

- Comment: It should be mandatory. It is the SSPN’s right to change the enforcement of the service to users in the Access Network.

- Chair: That is in the TGu scope.

- Comment: We should support that if we supports requirement R1S1.

- Comment: Same wordsmithing should be done here. This is to modify it during the same session.

- Comment: To the MAC, it is the same whether it is to start a new session or to change it.

- Comment: For example, if MIB is used to meet requirement of R1S1, we then need to say that it needs to be able to be changed during a session.

- Comment: Agree with that. We should say that “to be changed during the same session”.

- Comment: What will the scenario be? E.g. for Online Charging, the AAA changes the user level, the MAC will just treat it as a new session.
- Comment: Maybe need a note in the requirement stating that a scenario should accompany the proposed solution.
- Comment: That is possible.
- Comment: For example, when the MIB is used, the MAC may not consult the MIB during an active session. Therefore, this requirement is basically saying that MAC needs to be able to verify against the MIB parameters during a session.
- Comment: Some notes about this are needed.

Motion 2: Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Optional”.

Define functionality by which the information defined in R1S1 can be modified (by the SSPN).

Proposed: Sabine Demel

Seconded: Mike Moreton

Result (for/against/abstain): 6-0-4

Motion passed

2.11.3 Discussion of REQ d16S4

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Out of Scope”, and forward it to TGv for their consideration.

- Make accessible accounting information for transfer to the SSPN. This shall include information about accepted TSPECs, their duration, and about actual traffic flows.

- Comment: If it is accounting, it is out of scope.
- Comment: It is in scope, since it is needed for interworking. External operator needs the information.
- Comment: We may not have a group to take this, e.g. what happens if we say TGv should take it and then they reject it.
- Comment: This is only saying that if we need to choose a group within IEEE 802.11 to handle this, TGv is a logical choice. However, if they refuse to do it, we may need to handle it.

- Comment: It should be done at L3.
- Comment: It is useful, but we are not sure if that is needed here, since accounting is not in IEEE 802's scope.
- Comment: If it is about the information for the accounting, it is OK. If it is about the interface, it is out of scope.
- Comment: Not sure if what TGe provided is enough.
- Comment: So far, there is no accounting done at Layer 2.

- Comment: Accounting is different from keeping an accounting record.
- Chair: We heard that from the previous presentation also.
- Comment: In the roaming case, this information is transferred at L3, e.g. via AAA proxy.
- Comment: Does Layer 3 always know what a TSPEC a packet used?
- Comment: That is just a DiffServ mapping to Layer 2.

- Comment: A STA may use different priority for its actual service, e.g. when voice priority is not available, it may use video priority and try to run voice applications.
- Comment: That should be considered as fraud. Access Network should check the correct priority is used.

- Comment: If the requirement is accepted, and later a proposal comes in saying that it is not needed, we will remove the requirement.
- Chair: Yes.
- Comment: We should clarify if TGv does not accept it what we should do.

- Comment: Is the only thing we can add is the MIB?
- Chair: No. We can define the interface we think is necessary.
- Comment: In IEEE 802.11i case, MLME SAPs and MIBs are defined.

Motion 3:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Out of Scope”, and forward it to TGv for their consideration. If it is rejected by TGv, it will be reconsidered in TGu.

- Make accessible accounting information for transfer to the SSPN. This shall include information about accepted TSPECs, their duration, and about actual traffic flows.

Proposed: Sabine Demel

Seconded: Stefano Faccin

Result (for/against/abstain): 8-1-2

Motion passed

2.11.4 Discussion of IEEE 802.21 related requirements

- Chair: IEEE 802.21 editor will present some of their requirements for IEEE 802.11 within TGv later this week. Should we wait or work on these requirements in 05/279r16 now?
- Chair: Feeling from the group is that these requirements should be left until later. Will change the agenda to reflect that.

2.11.5 Discussion for REQ d16U1

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required - Optional”.

- Proposals shall not prevent a STA (subscription permitting) from accessing multiple Destination Networks at the same time.

- Comment: This is an evaluation criterion instead of requirement.
- Comment: Could change the text stronger to make it a requirement.
- Comment: The idea is to “not prevent”. It is different from “not to define”.
- Comment: VLANs are dealt in TGv.

Motion 4:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required - Optional”.

- Proposals shall allow a STA (subscription permitting) to access multiple Destination Networks at the same time.

Proposed: Mike Moreton
Seconded: Stefano Faccin

Result (for/against/abstain):7-0-2
Motion passed.

2.11.6 Discussion for REQ d16U2

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Out of Scope”.

- Functionality shall be provided by which traffic destined for a particular Destination Network can be segregated from traffic destined for other Destination Networks.

- Comment: It is internal to the Destination Network.

Motion 5:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Out of Scope”.

- Functionality shall be provided by which traffic destined for a particular Destination Network can be segregated from traffic destined for other Destination Networks.

Proposed: Mike
Seconded: Stefano

Result (for/against/abstain):6-0-4
Motion passed

2.11.7 Discussion for REQ d16U3

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Out of Scope”.

- Provide functionality to map external QoS classes to IEEE 802.11 specific parameters.

- Comment: Need to refer to IEEE 802.1D regarding this.

- Comment: Some of the architecture group can define the basic class, but the IEEE 802.11 groups should spell out how the IEEE 802.11 parameters can be mapped to those general parameters.

- Comment: What is the external QoS? Needs to have some example.

- Comment: E.g. IEEE 802.1D and GSMA defined QoS class.

- Comment: IEEE 802.1D mapping is defined in IEEE 802.11e.

- Comment: It only has some prioritized type of QoS mapping. The parameterized QoS is not mentioned at all.

- Comment: This may be an informational annex to the amendment.

- Chair: Is this optional?

- Comment: No. It is required for the proposal to provide that.

Motion 6:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Required”.

- Provide mapping from external QoS information, e.g. DSCP, to IEEE 802.11 specific parameters.

Proposed: Sabine Demel

Seconded: Hong Cheng

Result (for/against/abstain): 7-1-1

Motion passed.

2.11.8 Discussion of REQ d16M1

Motion 7:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Required”.

All proposals (whichever requirements they address) shall describe how they minimize battery consumption for mobile devices.

Proposed: Mike Moreton

Seconded: Sabine Demel

Result (for/against/abstain):8-0-2

2.11.9 Discussion of REQ d16M2

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Out of Scope”.

- Define functionality by which APs can provide information which will enable a STA to determine whether or not roaming to a candidate AP would require re-configuration (automatic or manual) of layer 3 networking.

- Comment: It is a handover issue.

- Comment: It is an indication issue, TGu should work on it.

- Comment: TGr has some similar work on the issue.

- Chair: From the earlier presentation on TGr requirements, TGr will do that.

- Comment: But TGr can only tell if you can do TGr roaming. It will never tell if Layer 3 reconfiguration is needed.

- Comment: What does reconfiguration imply?

- Comment: We are at Layer 2; we cannot say what needs to be done at Layer 3.

- Comment: We should pass this to IEEE802.21 instead of TGr.

- Chair: Feel this probably needs to be split into two.

- Comment: Here is to vote it out of scope. We can wait for IEEE 802.21 to do what they need to do.

Motion 8:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Not Required – Out of Scope”. Recommend forward it to TGr and IEEE802.21.

- Define functionality by which APs can provide information which will enable a STA to determine whether or not roaming to a candidate AP would require re-configuration (automatic or manual) of layer 3 networking.

Proposed: Mike Moreton
Seconded: Stefano Faccin

Result (for/against/abstain): 11-0-1
Motion passed

Session recessed for the break.

3. Monday afternoon session: (19th September 2005, 1600 - 1800)

Meeting call to order by the chair at 1600.

3.11 Continue the requirement discussion

3.11.10 Discussion of REQ d16M3

Motion 9:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Required”.

- All proposals (whichever requirements they address) shall describe the security impact of the functions they propose.

Proposed: Mike Moreton
Seconded: Stefano Faccin

Result (for/against/abstain):7-0-0
Motion passed

3.11.11 Discussion of REQ d16M4

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to “Required”.

- Define IEEE 802.11TM functionality which would be required to support an Emergency Call (e.g. E911) service as part of an overall, multi-layer solution.

- Comment: What did this come from?
- Comment: It is from Mike to provide some discussions. FCC now requires that all networks that support voice provide support the E911. There is a liaison letter received from 3GPP regarding this. There will be a chairs meeting amongst WNG SC, TGk, TGv, and TGu to discuss about it.
- Comment: This is not a result from the 3GPP liaison letter. Here, it is talking more than providing the location information as stated in the liaison letter.
- Comment: Suggest waiting for the result of tomorrows chairs meeting.
- Chair: Voting on the motion will be postponed to later this week.

3.11.12 Back to the R1S1 discussion

- Comment: It is worth looking at the Terms and Definitions document that has a definition of authorization information (05/333r8)

- Comment: Need to clarify whether it is the "subscribe user profile" or "subscribed service QoS profile"?
- Comment: What does "service QoS Profile" mean?
- Comment: For example, if the user subscribed to VoIP, the SSPN will allow up to the voice class to be provided in the Access Network.
- Comment: Is that something configured by the user terminal?
- Comment: No. For example, for the VoIP, some SIP signaling is done.
- Comment: That should not go to the AP. It is 3GPP details
- Comment: There are different opinions to do that. We should state that it should not be done here.

- Comment: If we say it is access author information does this imply that is it OK?
- Comment: The "TOE services" tends to imply the service authorization instead of access authorization.
- Comment: Here is an IEEE 802.11 group. The service is about the service that the IEEE 802.11 can provide.
- Comment: This bullet tends to point out that the authorization information would give information about where the traffic is allowed to be terminated.
- Comment: Does that also suggest which TOE?
- Comment: We need to define what TOE Services is.
- Chair: Can we clarify the definition?
- Comment: Suggest adding another bullet to the definition: at the top, to add that "This specifies the access authorization information only".
- Comment: Should be text above the bullet points, so that it applies to all the bullet points.

Chair updated Terms and Definition document to 05/333r9.

3.12 Liaison generation

A generic liaison letter will be generated and would be replicated to send to a list of organizations that are relevant to the interworking. Latest version of the document 05/822 will be attached, and comments will be asked for.

- Comment: Why should this letter be sent to IEEE 802.16?
- Chair: IEEE802.16g has some work done about the interworking, and it has been sent to 3GPP.
- Comment: WiMAX Forum should be the group to talk to regarding IEEE 802.16.
- Chair: Will add WiMAX Forum to the list.
- Comment: It would hard to ask specific questions if we sent it to IEEE 802.16.
- Comment: The groups for interworking in 3GPP2 are TSG-x and TSG-s.
- Comment: The 3GPP groups are SA2, SA3, CT1, and CT4.
- Chair: Which document should we attach to the liaison letter?
- Comment: It is good to include the Terms and Definitions document (05/333r9) as annex to the 05/822 (with only the terms referred in the requirements)

The session recessed to work in ad hoc mode to generate the liaison letter.

4. Tuesday Afternoon Session: (20th September 2005, 1330 -- 1530)

4.13 E911 issue discussion & REQ d16M4

It is decided during the chairs meeting that the E911 issue will be split up between TGk, TGv, and TGu. TGv will be responsible for the location relevant issue, and TGu will be working on admission control and advertisement issue.

Go back to the outstanding requirement: REQ d16M4

Suggested motion text:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to "Required".

- Define IEEE 802.11 functionality which would be required to support an Emergency Call (e.g. E911) service as part of an overall, multi-layer solution.

- Comment: What is the aspect of the admission control? Security or QoS?
- Chair: Security, i.e. whether to allow the user to use the E911.
- Comment: It is not in the scope of the IEEE 802.11u.
- Comment: The AP will allow a STA, without any credentials, to use the E911 service.
- Comment: If we accept that motion, does it mean that final STA has a mandatory feature to provide that?
- Chair: Yes. But the proposal is not judged against the requirements; it is decided by the group.
- Comment: This is the requirement on proposals to decide if it is partial. It is to advise people to address those issues. It is up to the IEEE 802.11 WG to decide if that is mandatory.
- Comment: It is not only a 3GPP issue, since it is an authentication issue. IEEE still has to do something. And, we are not just working for 3GPP.
- Comment: E911 is just for the USA. Do we have to do that for all the other countries?
- Chair: Yes. That is the reason for the "e.g." being there. In Europe there is also an initiative (E112) to provide a similar service.
- Comment: If there is no VoIP supported, it will not advertise that and don't have to support that.

Motion 10:

Accept the following text as a TGu requirement for proposals, and include it in the requirements document, with requirement status set to "Required".

- Define IEEE 802.11TM functionality which would be required to support an Emergency Call (e.g. E911) service as part of an overall, multi-layer solution. Specifically:

Capability Advertisement
Authentication issues

Proposed: Stefano Faccin

Seconded: David Hunter

Result (for/against/abstain):17-0-3

Motion passed.

4.14 Liaison generation continued

- Comment: Can the chair to extend the list to other appropriate group?
- Chair: Yes.
- Comment: We should state that in the motion.

The document to be attached is 05/822r2

- Comment: How do you see the feedback impact the call for proposal?
 - Chair: we have to proceed to go with the call for proposals, and then later we may change the requirements if there is need. We cannot postpone our activities and wait for other group to reply.

- Comment: Why WiMAX Forum?
 - Chair: We have that suggested yesterday.
 - Comment: Not sure WiMAX is affected.
 - Comment: It won't hurt to add that.
 - Comment: For 3GPP, SA1 should also be informed.
 - Comment: In IETF, MIPSHOP and CAPWAP should also be included.

- Comment: We need to approve the requirement document as a whole. To do that, we need to do the formal changes and upload that to the server.

- Comment: There are some "not required - out of scope" requirements. Those are confusing to be sent to others.

- Chair: it is nice to have that to show to people that we have considered the issues. It is defined on the top of the 05/822 what is the "out of scope"

The updated Terms and Definition document (05/333r9) is reviewed:

- Comment: The use of the "roaming" in the requirement document is different from the "Roaming" defined in the terms and definition document.
 - Comment: Better not to refer to the TGr roaming, since it requires external groups to go through TGr documents, and that is confusing.

New text for the "roaming" suggested.

- Comment: "TOE" is used in other place. Suggest changing to another name.
 The name "TOE" kept since no better suggestion could be provided.

Terms and Definition document is updated to 05/333r10.

Requirement document 05/822r2 is updated.

- Comment: would the IEEE 802.11 WG approve the requirement document?
 -Chair: No. only the LS letter has to be approved.
 - Comment: We need to set a deadline for the external organizations to reply.
 - Comment: How about the liaison letter from IEEE 802.21?
 - Chair: There were some discussions about a joint liaison letter. But it is decided to make them separate since that would be confusing.
 - Comment: Better to separate them, because they are about different things.

Text of the letter is updated as 05/960r1.

Session recessed for the break.

5. Tuesday Afternoon Session: (20th September 2005, 1600 - 1800)

5.15 – Mid week plenary liaison presentation

Motions will be raised by the chair during the mid-week plenary session.

Motion 11:

Move that IEEE 802.11 WG approve document 11-05-0960r1, as a generic liaison letter, asking for review comments about the IEEE 802.11u requirements document (11-05-822r2), to the following organizations:

- 3GPP
- 3GPP2
- IETF
- FMCA
- GSMA
- Wi-Fi Alliance
- IRAP
- IEEE 802.1
- IEEE 802.16
- IEEE 802.21
- WiMAX

Proposed: Amjad

Second: Sabine Demel

- Comment: Is IEEE 802.15 being purposely left out.
- Chair: The justifications for the groups are that IEEE 802.1 is dealing with architecture, IEEE 802.16g is addressing interworking, and IEEE 802.21 is address interworking and media independent issues. However, for IEEE 802.15, there is no interworking issue so far.

- Comment: Is IEEE 802.16 interworking with IEEE 802.11?
- Chair: IEEE 802.16 is taking a generic way of interworking.
- Comment: Then, are we following the IEEE 802.21?
- Comment: But they don't do (11) MAC.

Result (for/against/abstain): 13-0-0

Motion passed

- Comment: If we decide to change the requirement document, do we have to change the motion?
- Chair: No. The motion only applies to the Liaison Letter.

- Comments: The group should be "WiMAX Forum".

A new motion is raised:

Motion 12:

Move that IEEE 802.11 WG approve document 11-05-0960r1, as a generic liaison letter, asking for review comments about the IEEE 802.11u requirements document (11-05-822r2), to the following organizations:

- 3GPP
- 3GPP2
- IETF
- FMCA
- GSMA
- Wi-Fi Alliance
- IRAP
- IEEE 802.1
- IEEE 802.16

-IEEE 802.21
-WiMAX Forum

Proposed: Scott
Seconded: Stefano Faccin

Result (for/against/abstain): 10-0-2

The session is recessed.

6. Wednesday Afternoon Session: (21st September 2005, 1600 - 1800)

The agenda is updated to 05/890r3

6.16 Downgrade Attack Protection

TGu requests that TGw address the requirement of providing protection on beacon elements.

The group's feeling is that it is too earlier to decide on what we really want to do. The chair will inform TGw chair that there is currently nothing to discuss.

6.17 Technical Presentations

6.17.1 Redefining SSID (05/971r0) Jon Edney

- Comment: What is the relationship with the "mobility domain" (of the TGr presentation)?
- Comment: "roaming group" means layer 2 connectivity, without changing layer 3.

- Comment: Although it is desired to have unique identifier for different domains, operators would also want to have a common identifier so that the user can expect the user experience.
- Comment: That can still be done with SSID.
- Comment: People will be able to spoof that.
- Comment: That is a different problem. This one is addressing the ESS ID. Forgery is addressed later.

- Comment: Do you suggest removing the SSID?
- Comment: SSID remains to be service identifier, ESSID id provide connectivity information
- Comment: Why you want to have it remain?
- Comment: Compatibility to legacy system.

- Comment: Why the ESS name is needed?
- Comment: To provide location information e.g. U.S.

- Comment: Can STA roam between APs of same SSID with different ESSIDs?
- Comment: Yes.
- Comment: Can we make use of the some information in SSID to make it more efficient?
- Comment: That has compatibility issue.

- Comment: What will be the protocol to convey the information?
- Comment: The AP can provide the information about what is behind itself for the service, which is the ESSID, through association procedure.

- Comment: Will STA associates with AP asking for a SSID, and AP gives a different SSID back?
- Comment: It is not SSID. The AP replies with the ESSID. The STA ask for SSID (if it does not have ESSID)
- Comment: For legacy STA, will they get SSID back or ESSID?
- Comment: Legacy STA will not recognize the ESSID, it will discard it. When it roams to another AP, it will use the SSID again. But there is no guarantee to that the system will provide the fast roaming service. It depends on the AP.

- Comment: How about when the AP moves?
- Comment: If AP moves, the ESSID needs to be fixed. It won't be correct globally. Also the ESSID doesn't have to be permanent. When the AP reboots, it can use a new value.

- Comment: What is the two path index for?
- Comment: An AP may have multiple VLANs supported. STA needs to match its desired with the list. The point is that AP can support multiple services.
- Comment: Is that essentially another sub layer?

6.17.2 FMCA (05/871r0 & 05/872r0) Rodrigo Donazzolo

Point of order (Jon Edney): The presentation material on the server contains copyright issues.

The presentation is voided, and the documents are not recognized.

The group reconvened to hold a joint ad hoc session with IEEE802.21

6.18 IEEE802.21 issues : Vivek Gupta

Vivek presented a tutorial on IEEE 802.21 for the IEEE 802.11 members

- Comment: It is desired that the mobile phone (on slide 20) can tell you which cafe has the WLAN hotspot.

Vivek presented the initial layer 2 requirements from IEEE 802.21, which are specific to IEEE 802.11

- Chair: Within IEEE 802.21 there are teleconferences to address these requirements. Can these be made formal IEEE 802.11u/IEEE 802.21 joint teleconferences?
- Chair: Will work with IEEE 802.21 chair for that.

- Chair: In TGu, it is decided to postpone the IEEE 802.21 related requirements. They will be addressed in detail during the November 2005 meeting.

- Chair: Will try to get a 4 hour joint session in November 2005 to go through this document and generate some requirements for the call for proposals.

- Comment: How is the timing of the requirements for your work?
- Chair: TGu will hopefully issue a formal "Call for Proposals" at the end of the November 2005 meeting. The timing is just OK.

- Comment: Some meetings ago, there was something about charging being considered at the IEEE 802.11 AP. Did this issue become a requirement of TGu?
- Chair: We didn't distill that. There is still a requirement relevant to that issue.

- Chair: There will be an official liaison letter set to IEEE 802.21, from IEEE 802.11 regarding the current TGu requirements. Formal comments on that are welcomed.
- Chair: There still appears to be some confusion about mobility aspects between IEEE 802.11u and IEEE 802.21, and that is why the joint teleconferences have been suggested.

Session recessed.

7. Thursday Morning Session: (22nd September 2005, 0800 – 1000)

7.19 Down Selection Discussion (05/618r1)

The down selection procedure will be reviewed in detail at the November 2005 meeting.

7.20 Initial Technical Presentations

Chair reminded everyone about the IEEE IPR policy.
The presentations are in random order since it is informal at this stage.

7.20.1 Network Selection (05/870r0 & 05/1006r0) Stephen McCann

The chair (Stephen McCann) handed over the chairmanship to the secretary (Hong Cheng) to facilitate the presentation.

- Comment: It did not really satisfy the 3GPP requirements. 3GPP want to allow network to add information and sent to the STA. (e.g. in case of negative response)
- Comment: Does this require some notes to be added to the requirement document?
- Comment: This could be part of the 3GPP response to the liaison letter that IEEE 802.11 sent to 3GPP on Wednesday. Perhaps 3GPP will come back with an extra requirement in November 2005.

Will come back with more details next time.

The chair (Hong Cheng) handed over the chairmanship back to Stephen McCann

7.20.2 Service Access Context (05/898r1) Mike Moreton

- Comment: For the VLAN, the Access Network will check the source and destination address and decide on the designated port.
- Comment: Why it needs to be handled at Layer 2, not above?
- Comment: It is back to the security issue. IEEE802.11i binds the pair wise key to the authentication to a SSPN.
- Comment: Authentication may be at layer above.
- Comment: You need to do Layer 2 authentication before you get access to Layer 2 that allows any Layer 3 message exchange (e.g. authentication). If it is handled at upper layer, it means the Layer 2 authentication must be left open. Most operators and users still prefer to have an Access Network authentication.
- Comment: To the AP, every packet goes to the same destination. Why would it care?

- Comment: They are associated with different authentications, e.g. if one authentication closes down, the others should be left open. And different authentication may have different key strength.
- Comment: Even for multiple SSPN, there is only one authentication server (AS) is assumed in the Access Network.
- Comment: Virtual AP can also solve the issue.
- Comment: In that case, the STA needs to realize that it has two virtual connections. It needs two separate keys, addresses, etc. to those APs. STA need to have two contacts. Generally it is a scalability issue for the virtual AP. This is just an approach, not the only solution.
- Comment: Can the STA just authenticate to the AN and then tunnel to diff SSPNs?
- Comment: It doesn't solve the fundamental issue. How the STA access a local service?
- Comment: it is the agreement between SSPN and the AN. it is possible to do that way.
- Comment: If STA have subscribed to different SSPNs, one policy can influence the other. That is why it needs some segregation. And, user don't have relationship with the AN. it may not trust the AN.

7.20.3 MIS Protocol (05/859r0) Hitoshi Morioka

- Chair: The MIS Protocol has been developed in Japan. Is it an alternative to IEEE 802.11i?
- Hitoshi: Yes.
- Chair: Does this presentation meet some of the TGu requirements?
- Comment: Yes. The slides will be modified to fit the requirements that are approved this week.
- Comment: This is an alternative way to do authentication segregation at higher layer regarding a previous question. But for this group, we need to be clear about how much needs to be done to support that.
- Comment: Is this a Layer 2.5 authentication suite, with Layer 2 authentication turned off?
- Hitoshi: Yes

7.20.4 802.11u Proposal (05/850r4) Linda Dunbar

- Comment: On slide 3, (regarding multiple SSPN), in IEEE 802.11i there is an AS in the network, here, it has have multiple AS.
- Comment: Are the virtual STAs talking to the same BSS and talking to the same AP?
- Linda: Yes. It is just a concept to make it easier to manage.
- Comment: Is this similar to the previous proposals (05/898r1)?
- Comment: This may also require the same solution.
- Comment: Do the virtual STAs map to the same physical queue or different queues? Or will they have different lower layer?
- Linda: These will be addressed in detail next time.
- Comment: Multiple STA should share the same IEEE802.11e queues.
- Comment: Does the AP need to know about the virtual STA? It might be a TGr problem. But from our concern, it is more like a STA business. It only needs to make it possible, e.g. by allowing multiple/temporary MAC address (05/898r1). We don't need to care about the rest.

- Comment: What if the AN or the Entrance doesn't allow that happen?
- Comment: The relationship is between STA and SSPN. AN doesn't need to know about that. It only needs to have a way to create virtual addresses...
- Comment: The temporary MAC will affect the Entrance, but not the AP.

- Linda: What the next step for the proposal?

- Chair: Suggest talking to people offline. There are possibilities of providing joint proposals. The group will ask for detail proposal in Nov. Formal CFP will be issued then. The down selection start is scheduled in January 2006.
- Linda: Is there a deadline for the model adoption?
- Chair: Not yet decided. Will discussion that in the November 2005 meeting.
- Comment: Suggest talk to Jon Edney. In TGr, there are some similar proposals.

Session Recessed for the break.

8. Thursday Morning Session: (22nd September 2005, 1030 - 1230)

8.21 3GPP E911/IMS Emergency Call Liaison Letter discussion (05/988r0)

- Comment: 3GPP people may not understand the "STA", as it also includes the AP.
- Chair: It is not for us TGu to correct that, as that paragraph within the liaison was written by TGv. And it was corrected by Peter Eccelsine during an earlier discussion.
- Comment: Would like to add a sentence to clarify that.
- Chair: A note will be added in a bracket beneath. We will check with TGk later. As this is an IEEE 802.11 liaison, which other groups have helped to craft, TGu cannot change all sections of the letter as we wish.

Liaison Letter text updated.

- Chair: I will take this to the CAC meeting on Thursday evening.

Document updated to 05/988r1

8.22 Teleconference requirements

The group feels that there are no TGu issues to be discussed between this meeting and the November 2005 meeting. But the group may join in IEEE802.21 teleconference as discussed yesterday.

8.23 Timeline document review (05/049r3)

- Comment: We expect Responses from external groups by end of 2005. That should be reflected in the timeline document.
- Chair: Changes or new requirements from external groups will fall into the "response to incoming liaison".

Timeline updated with January 2006 set for initial proposals.

- Comment: What does it mean by "final proposals"?
- Comment: Means the start of the down selection procedures.

- Chair: The down selection procedure needs to be fixed before issue the CFP (Call for proposals).

Move the first step of down selection to March.

The timeline is revised to 05/049r4 and uploaded to the server.

8.24 Preparation for November 2005 Plenary Meeting

- Comment: How much flexibility do we have to change the requirements?

- Chair: In the November 2005 meeting, we will sort out the requirement document. When the CFP goes out, we need a base for the proposals.

In the November 2005 meeting, TGu will have a joint session with IEEE 802.21 and also a joint meeting with TGv

- Comment: Would like to have reciprocal attendance arrangement with IEEE 802.21 since they are discussion a lot issues regarding IEEE 802.11.

- Chair: I will take that that to the CAC meeting.

- Comment: Will the IEEE802.21 teleconference be announced in TGu list?

- Chair: Yes. IEEE802.21 chair will inform me of the teleconference setup, and I will put that to TGu list.

8.25 AOB

No issues.

Session adjourned till the next IEEE 802 meeting in November 2005, Vancouver, Canada.

Minutes Not Yet Available

**IEEE P802.11
Wireless LANs**

**Minutes of 802.11 Task Group V
Wireless Network Management
Anaheim, CA
September, 2005**

Date: 2005-09-22

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Abstract

This document records minutes of the 802.11v Task Group meeting of September, 2005 at Anaheim, California.

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1. Monday Morning Session, September 19, 2005

1.2. Opening

1.2.1. Call to order

- 1.2.1.1. Pat R. Calhoun (PatC): I call the meeting to order.
- 1.2.1.2. Meeting convened at 1034 hours.
- 1.2.1.3. Please pull down document 914r1 from the server so we can begin, as we have no ability to project the document until a video cable arrives for the projector.

1.3. Process

1.3.1. Review of Agenda

- 1.3.1.1. PatC: You see before you document 0914r1. Please go to page 3. We'd like to go over the pending items, and also to review Emily's objectives in addition to getting up-to-date text. Specific work is detailed in document 796r1.
- 1.3.1.2. EmilyQ: My document is 827r0.
- 1.3.1.3. PatC: We anticipate some presentations. We have a presentation on 891r0. We also have a proposed TGv process by Emily in 0918, and another on diagnostics and troubleshooting requirements. Roger Durand also wishes to present 0946 on Spectrum Etiquette.
- 1.3.1.4. SimonBlack: I would like to present tomorrow on Coexistence in multi-radio devices as well.
- 1.3.1.5. JoeEpstein: Shall we have the diagnostics presentation tomorrow?
- 1.3.1.6. JoeKwak: I shall also present 280r2 on Advanced Antennas tomorrow.
- 1.3.1.7. PatC : OK. [Reviews agenda]. Task groups "k" and "v" had conflicts so I gave Richard our slot for TGk.

1.3.2. Approval of the agenda

- 1.3.2.1. PatC: Is there any objection to accepting the agenda as shown? None. The motion to approve the agenda passes unanimously.

1.3.3. Review of Patent Policy

- 1.3.3.1. PatC: I would like to read the patent policy shown on the screen. Are there any questions on the policy? None. Let us proceed.

1.3.4. Approval of Minutes from Last Session

- 1.3.4.1. PatC: I call your attention to the minutes recorded in document 05/0725r1. May I have a motion to approve the minutes?
- 1.3.4.2. Bob O'Hara: I so move.
- 1.3.4.3. Motion: To accept the minutes as shown.
- 1.3.4.4. PatC: Is there a second?
- 1.3.4.5. Paul Gray seconds.
- 1.3.4.6. PatC: Is there any objection to passing this motion? None. The minutes are approved unanimously.

1.3.5. Review of Attendance Procedures

- 1.3.5.1. PatC: I have been asked to review attendance procedures for this meeting. Sign up sheets are available each day at the registration desk. You must sign up between 8am and 5 pm stating your percentage of 802.11 attendance. Are there any questions? None.

1.3.6. Review of Document Submission/Retrieval Procedures

- 1.3.6.1. PatC: 10.0.0.10 is available for document downloads. Try to use the local server rather than the 802WirelessWorld server to ease demands on the network.

1.3.7. Review of Objectives

- 1.3.7.1. PatC: Emily, is 732r0 text available on Client Management Protocol. Yes.
- 1.3.7.2. PatC: Let's look at document 0796, and review presentations that were action items. Spectrum etiquette: Roger, Simon? Yes. Necati, do we have location based management? No. Joe Kwak, how about Antennas? Yes. Diagnostics and Troubleshooting, Joe Kwak will wait to see if Emily covers. Tim Olsen, "SNMP or not to SNMP"? Yes for Thursday. Fault Tolerance/Management. Anyone want to present on fault tolerance? In San Francisco it was suggested that these networks are becoming critical and so must be fault tolerant. No? OK. AP MIB, Paul? You said you might be interested. No. Anyone else interested? No. We will declare non-scope. Home Area? No. Client control and Operation? Necati says "no". Active Management Technologies? No. SME interface? No. Roaming etc? No. IBSS/802.11b? No. Advertising Service Capabilities have transitioned to TGU, so no. Control Framework for TGv? Joe, do you know about this, as it seems this should be active? Marian, do you remember why this is "no"?
- 1.3.7.3. Marian: We need to move this back up.
- 1.3.7.4. PatC: We shall move this back up into the active list. I'll update this document on the network. Stuart, do you believe you will be addressing location-based management? Not sure.
- 1.3.7.5. JoeK: What do we do with IBSS? What does this mean? Does this mean we're going to ignore IBSS? Or shall we take a position similar to "k": if there's no reason it can't be applied to IBSS, it would be OK. I'm concerned about putting in a non-work item for IBSS, we might give the impression we are not having anything to do with IBSS.
- 1.3.7.6. PatC: You raise a good question. What do you all think?
- 1.3.7.7. JoeK: I'd like to get opinions on what mesh is doing separately rather than using the IBSS foundation. There's not much implementation of IBSS. Ongoing, should we continue to support?
- 1.3.7.8. BobO'Hara: I remember this task group was to do network management extending to the station device. Is the station a network? I come down on the side that IBSS is not a network.
- 1.3.7.9. JoeEpstein: I do not think IBSS is completely irrelevant. I can't come up with a specific instance, though.
- 1.3.7.10. RichardH: Almost no one uses the IBSS functionality. I think what's happening is that IBSS is not being used. If we see functionality that could fit, as we work on infrastructure mode, we should include it.
- 1.3.7.11. DarwinE: IBSS is important and should not be excised. Reaching directly into a neighbor's PC is not a good thing to do, however.
- 1.3.7.12. JoeK: Looking at the other work items, there are many things that also address IBSS. Why wouldn't power control apply to ad-hoc networks? Why would moving frequency not be used in IBSS? I resonate with those that say let it go, but if an item addresses it, it should be allowed to do so.

- 1.3.7.13. TimO: Extend the work done in 11k. If we are extending k measurements, etc.. If it's covered in "k", we should consider it, but otherwise no. Not covering it at all could produce comments.
- 1.3.7.14. PatC: I'm unsure of what conclusion we should come to.
- 1.3.7.15. Kevin: I suggest we consider three paths: Promote it, demote it, or eliminate it Perhaps we can have a straw poll. Let's have a straw poll to "promote to active work item"?
- 1.3.7.16. PatC: [typing] Straw Poll Text: How do we want to deal with IBSS.
- 1.3.7.17. 1. Promote it as active work item
- 1.3.7.18. 2. Consider it out of scope completely
- 1.3.7.19. 3. On a case by case basis as other objectives are developed.
- 1.3.7.20. JoeK: Suggest for (3) "Consider IBSS functionality for all work items."
- 1.3.7.21. PatC: Everyone agrees on language? OK. Please vote only once.
- 1.3.7.22. #1-1 vote, #2-4, #3-20
- 1.3.7.23. Stuart, I believe your presentation is next.

1.3.8. Presentation of Document 05/891r0

- 1.3.8.1. Stuart Golden, Intel presents "Enabling Localization in WLAN by Time-Stamp Differences (TSD)" Localization suggests addition of high-accuracy location using time-stamp difference. GPS doesn't work indoors. It would be helpful if indoor wireless LANs could function the same way. Shows 4 minute video demonstrating application. Covers signal strength, time difference of arrival, time of arrival, discusses benefits/liabilities of each.
- 1.3.8.2. [Discussion regarding turn-around delay in 802.11 devices, scope of use considering areas where GPS doesn't work, resolution]
- 1.3.8.3. Darwin Engwer: GPS can work indoors with repeaters.
- 1.3.8.4. Stuart: Yes, that's true. However the repeaters must transmit in the GPS band, which the FCC doesn't allow.
- 1.3.8.5. DarwinE: I was addressing the comment that it's not possible. On slide 7 you say the client's TSD is between probe request and acknowledgement. Are you talking about frames or packets?
- 1.3.8.6. Stuart: Frames.
- 1.3.8.7. DarwinE: Is this viable and is there test data? I can point to test data that shows this is viable. By taking several measurements one can get accuracy.
- 1.3.8.8. Schlomo: Discussion of details on whether several APs have to interact over the wired network to make the idea work, and how a client knows the location of each AP.
- 1.3.8.9. Stuart: One would have to identify the location of access points. If one downloads a list, then each AP location would be known to the client.
- 1.3.8.10. JoeEpstein: Suggest that you need to use the last bit of the preamble, because start of preamble depends on when sync occurs.
- 1.3.8.11. BobO'Hara: I agree.
- 1.3.8.12. Darwin: Stuart is suggesting that the AP include its delay in the message.
- 1.3.8.13. JoeE: There may also be jitter which is hardware dependent, which may make the approach inappropriate for standardization because it will not work with all implementations if just in the MAC..
- 1.3.8.14. TimO: Describe how the actual process works. Concerns about the number of access points that can "hear" client, and how client must change frequencies to get to all of them.
- 1.3.8.15. JoeK: I suggest you come back with more specific analysis of ranging mechanism and error analysis. We are attempting to focus on MAC-level approaches only.

- 1.3.8.16. Darwin: I think what Stuart is proposing requires precision timers and filters, etc. I could present on this...
- 1.3.8.17. BobM: I presume all measurements made with same APs and STAs?
- 1.3.8.18. Stuart: Yes.
- 1.3.8.19. Stuart: I'd like to request straw poll
- 1.3.8.20. PatC: I'd like to postpone your poll and do this one, instead:
- 1.3.8.21. Does TGv want to include in its objectives to support higher precision ranging? 20 Yes, 0 No
- 1.3.8.22. PatC: On Tuesday 1230-1430 we shall discuss this along with Darwin's work? Group agrees.

1.4. Closing

1.4.1. Recess

- 1.4.1.1. PatC: I believe we have only about 5 minutes left, so I suggest that we recess.. Is there any objection to recessing? Hearing none, we are recessed.
- 1.4.1.2. Recess for the day at 1225.

2. Tuesday Morning Session, September 20, 2005

2.2. Opening

2.2.1. Call to order

- 2.2.1.1. [The secretary wishes to acknowledge and thank Pat Calhoun and Jesse Walker for taking minutes during his absence]
- 2.2.1.2. Pat R. Calhoun (PatC): I call the meeting to order.
- 2.2.1.3. Meeting convened at 0800 hours.

2.3. Process

2.3.1. Presentation of Document 05/0918r1

- 2.3.1.1. Emily Qi presented document 05/0918r1 proposing a baseline draft creation process. The document was updated in response to the discussion, to apply only to the creation of the base draft, and to correct some errors made in the text.
- 2.3.1.2. PatC: There is a motion:
- 2.3.1.3. TGv shall use the process defined in doc# 11-05-9182r2 (Step 1, 2, 3, and 4) for the substantive text selection to produce the base draft.
- 2.3.1.4. Moved: Emily Qi
- 2.3.1.5. Second: Joe Epstein
- 2.3.1.6. PatC: Is there discussion on the motion?
- 2.3.1.7. [Discussion: Con: A process isn't necessary to create a base draft. Pro: We need a way to a baseline the draft. The alternative is completing full proposals, which isn't going to happen.]
- 2.3.1.8. Question called.
- 2.3.1.9. PatC: Is there any objection? No objection to the calling question.
- 2.3.1.10. Vote: 13-3-6, motion passes
- 2.3.1.11. Discussion on a motion that Jesse Walker intends to present, which is to allow updates to the Objectives document by a 3/4 vote, but allow the chair

to rule proposals out of order if it does not address one of the objectives. An objection is raised that it would be appropriate if TGv had adopted an objectives document, but it has not. Jesse agrees to delay motion until TGv adopts an objectives document. Request made to schedule a vote on the objectives document during TGv's final session this week.

2.3.2. Presentation of Document 05/0905r0

2.3.2.1. Emily Qi presents document 05/0905r0 on Diagnostics and Trouble-Shooting.

2.3.2.2. [Discussion: Observation that Alerts correspond to SNMP traps. "Extensible" in the presentation means that it should be easy to add new messages to the protocol even after the standard is published.]

2.4. Closing

2.4.1. Recess

2.4.1.1. PatC: I suggest that we recess. Is there any objection to recessing? Hearing none, we are recessed.

2.4.1.2. Recess for the day at 1030.

2.5. Opening

2.5.1. Call to order

2.5.1.1. Pat R. Calhoun (PatC): I call the meeting to order.

2.5.1.2. Meeting convened at 1100 hours.

2.6. Process

2.6.1. Presentation of Document 05/0945r0

2.6.1.1. Presentation of document 05/0945r0 by Joe Epstein on Diagnostics. The document is a follow-on to the May presentation (11-05/0505r0). It addresses a special mode of operation where APs with overlapping AP coverage can exchange messages to automatically perform the task. APs can then adjust their RF parameters to help optimize coverage. Neighbor learning process slide: Allowing APs to automatically detect their neighbors. Report Sharing: is a way for an AP (or other device) to receive ongoing copies of specified reports (over the air).

2.6.1.2. [Discussion: Site survey seems to suggest 2 mechanisms for APs to coordinate with each other and a way for them to share the results. Report sharing suggests that an AP share with another the contents of its stations reports.]

2.6.1.3. PatC: We need some straw polls to determine if diagnostics should become an active item for TGv.

2.6.1.4. Straw poll: TGv should support extensions for APs to collaborate their scanning or report-taking behavior, including a possible site survey mode.

2.6.1.5. Yes 11, No 6.

2.6.1.6. Straw poll: TGv should support extensions for AP to register with other APs (or STAs) for copies of some reports responses they receive.

2.6.1.7. Yes 3, No 7.

2.6.1.8. Straw poll: TGv should support extensions for APs to request reports from each other.

- 2.6.1.9. Yes 3, No 7.
- 2.6.1.10. PatC: This item should go back to TGk
- 2.6.1.11. PatC: Let's revisit Diagnostics and Troubleshooting (11-05/0905r0). Emily Qi (follow on from previous discussion, straw poll only). We need to take straw polls for objectives related to diagnostics.
- 2.6.1.12. Straw poll: TGv should support MAC extensions to improve wireless network diagnostics and troubleshooting.
- 2.6.1.13. Yes 15, No 2
- 2.6.1.14. [Discussion: This information can be gleaned already from the beacon report. This work should have been done in TGk. There is no mechanism for an AP coordinate with another AP (it is outside of TGk's scope). This appears to be outside the scope of IEEE altogether if it assumes infrastructure communication.]
- 2.6.1.15. Straw poll: TGv should provide a mechanism to allow STAs to report alerts when a failure occurs or performance degrades.
- 2.6.1.16. Yes 15, No 3.
- 2.6.1.17. Straw poll: TGV should provide an extensible framework for STAs to report event log and diagnostics data as AP requested.
- 2.6.1.18. Yes 9, No 6

2.6.2. Presentation of Document 05/0280r2

- 2.6.2.1. Joe Kwak presented "Advanced Antennas", document 05/0280r2 reworked from its original contribution. The presentation outlines procedures that could be used special uplink and downlink beam-directing coordination via the MAC. This was presented 2 meetings ago (Cairns). Look at the uplink and downlink Pointing Problems, add an update on antenna tracking suggestions. Without some management features/functions in the standard, the companies investing in advanced antennas cannot realize the full advantages of these systems.
- 2.6.2.2. Uplink Problem: Issue is an AP does not have any a priori knowledge of who will transmit when. So the location of the next transmitter is not known, and therefore it cannot select the right antenna for the station. Even if it did know, the person could have moved from the location. So the issue is for the AP to select the correct directional antenna when an ad-hoc or contention based access is used in order to determine who is allowed to transmit. The solution presented in Cairns was for an AP to only use omni mode for uplink frames, but that doesn't allow for the advantage antenna to be used. Perhaps a complex receiver technology could allow all beams to be used simultaneously, but cost is prohibitive. Alternatively, some scanning technology could be used, but that would be hit/miss, but this would lead to lots of retransmissions when a station that had access could not find the AP's antenna train. Alternatives that include PHY changes have been ruled out of scope of the TG. Having the STA use RTS/CTS prior to sending frames would work, but is inefficient.
- 2.6.2.3. Proposal: STA decides which uplink transmission needs advanced antenna, e.g. any large uplink burst, any uplink burst requiring high data rate or low latency, etc.
- 2.6.2.4.
 - STA transmits RFA frame which contains a requested AP antenna ID (one which provides this STA with the best downlink signal). NAV is set to cover time period for the data transmission or first fragment.
- 2.6.2.5.
 - AP receives RFA frame and switches to the requested antenna.
- 2.6.2.6.
 - STA sends the uplink frame with updated NAV timer set to cover the ACK for the next fragment.

- 2.6.2.7. • RFA is a Management Action Frame which is used to define a new frame exchange sequence similar to use of CTS for NAV distribution purposes.
- 2.6.2.8. Downlink Problem: Allows a station, during association process and afterwards for mobility tracking, to determine which downlink beam is appropriate for the AP. The suggestion solution is the same as in Cairns. During the probing process, when detecting the candidate AP, the STA would request the AP to use one of each of its available antennas. Each probe would include an antenna ID. This allows the station to measure on each beam and determine which one is best. For mobility purposes, a link measurement request would discover/configure the best AP antenna. The AP sends a link measurement report with an antenna ID, and again the STA determines the best one.
- 2.6.2.9. [TGv secretary resumes minutes]
- 2.6.2.10. Recommendation: The 802.11 lacks support for advanced antennas. This is just a proposed solution that would have to be refined by the TG. These MAC layer solutions should be adopted as objectives in TGv. A straw poll is requested to obtain approval for making this an active work item.
- 2.6.2.11. PatC: Is there discussion?
- 2.6.2.12. RogerD: RTS/CTS is normally used for such circumstances.
- 2.6.2.13. JoeK: Under some circumstances, one could use these procedures if RTS/CTS is not in use. This is a middle approach between RTS/CTS and nothing.
- 2.6.2.14. JoeE: I think the RFA changes how we accomplish the "reservation". Do you contemplate creating a new control frame or modifying CTS? Up until now you can implement on standard hardware, but this proposal may require either a new control frame, or a management frame that using different interframe spacing.
- 2.6.2.15. JoeK: I believe the approach I've outlined is less-impacting. There are 3 options: inventing a new control frame, redefining CTS, or suggesting a management frame with a different inter frame sequence. It appeared that the third was the simplest one to implement. This could be argued as a different method to perform fragmentation. This would require that we go down the path of changing the behavior of ACKs as well.
- 2.6.2.16. JoeE: We'd have to make modifications at the channel access layer to implement this.
- 2.6.2.17. JoeK: This is really nothing more than changing the fragmentation approach.
- 2.6.2.18. EmilyQ: On slide 15, the straw poll, I am confused about what the work item actually is. The straw poll is not sufficient, and must include recommended text for the objectives document.
- 2.6.2.19. JoeK: This addresses only adding this as a work item, not detailing how the capabilities will be established.
- 2.6.2.20. TimO: I like the idea of improving antenna selection, but this covers only multiple omni or sectorized antennas. What about support for diversity antennas? It's not clear whether we can come up with something detailed enough to cover all types. How can you do this without adding significant overhead? Further, antennas could change all the time with roaming devices, so how do you keep up with dynamic environments.
- 2.6.2.21. JoeK: There is no requirement to switch mid-stream. The protocol is just for the provisioning to determine, which is the preferred antenna. This does not degrade performance in the omni case. Each omni or sector antenna would have an identifier to make sure that each antenna can be addressed independently. The CTS handshake is also still available. This antenna is low-overhead way to signal a preferred antenna. The approach is intended to be general.

TimO: How could one keep pace with constantly changing diversity antennas. The antenna could change on every packet. It seems like there would be tremendous overhead. Presumably, this only works with sectorized directional antennas, and not with 2 diversity antennas. In the case of the 2 sectorized antennas, it's not clear that any messaging is any different from using the ACKs to determine which antennas are better, which is what existing systems do today.

JoeK: The approach is general, and each antenna would have a separate ID. When probing for the first time, each omni would be used in the response, and the STA would use one vs. another. It includes multiple directional in the same directions. However, it only provides the intermediate step, and the full CTS/RTS is still available. The gain is better with directional sectorized antennas. This simply allows preference information to be transmitted. It is not an attempt to continuously follow or command antenna changes.

2.6.2.22. TimO: How would this be better than simply watching how the ACKs behave?

2.6.2.23. JoeK: That may be an alternative. A combination of probing and link measurements seems sufficient for downlink.

2.6.2.24. Simon: I'm trying to work out exactly how this would work.

2.6.2.25. JoeK: This was intended only to show possible solutions and to allow us to adopt it as a work item. Normative text would follow as we improve the ways the idea could be standardized. The last time this was presented, we had no solutions. This time we have possible solutions.

2.6.2.26. TimO: This proposal assumes this occurs during probing time, but what about after association.?

2.6.2.27. JoeK: The proposal assumes the probe for downlink, but you could use other frames as well. If the probe is not sufficient, we can use some other mechanism. You could do it with data frames too if you wanted to, but it's probably not required.

2.6.2.28. SimonB: Many details, but general statements, were made.

2.6.2.29. JoeK: This is a conceptual paper to help decide on the work item. There are solutions available, and some were presented, but we would have to follow up with normative text. The last time there was no appropriate solution, this time around some proposed solutions are included.

2.6.2.30. RogerD: I support this because 11n might use them. We're trying to guess what such proposals would be. Many of the items you brought up would be valuable for them to consider. Are we going to support 11n? If so (and I think so) we should support this work item. However, we may not be able to work on it until 11n firms up.

2.6.2.31. PatC: Let's go back to the straw poll:

2.6.2.32. TGv will define a management approach to support Advanced Antennas. For example the mechanisms defined in 11-05/0280r2 would be one approach.

2.6.2.33. Yes 9, No 3.

2.6.3. Presentation of Document 05/0952r0

2.6.3.1. Darwin Engwer, Nortel, presented "Viability of Location Determination", document 05/0952r0. In a previous session, we discussed location techniques. As Darwin had done some work on this in the past, he thought it might be useful to share it. Presentation discusses various ways of locating and their accuracies. Outlines a statistical method for reducing inaccuracies for time-of-flight measurements due to MAC response time. Golden's method uses a measurement of the MAC response delay directly and transmitting it along with the reply.

- 2.6.3.2. RogerD: If one needs 3 foot resolution, one needs 3 nSec resolution, which seems to require a 300 MHz clock. This would seem to require a precision timer. The RTS/CTS timing is not specified in the standard.
- 2.6.3.3. Darwin: The MUP value does not change very much because the CTS/RTS turnaround is a low-level MAC function slaved to the state machine clock ticks. That time is very predictable.
- 2.6.3.4. RogerD: I'm still concerned about various implementations.
- 2.6.3.5. JoeEpstein: Referencing the previous presentation, would it be reasonable to provide specific implementation information?
- 2.6.3.6. Darwin: One could have a totally asynchronous machine that would obviate the method.
- 2.6.3.7. JoeE: One could have a capability bit to flag support for this application.
- 2.6.3.8. Unknown: One could also tell by manufacturer
- 2.6.3.9. DarwinE: Yes one could tell from the MAC address and have a table look up to correct the delay for a particular manufacturer's unit. Using the statistical approach one can look for clusters of delays that match to get a good approximation.
- 2.6.3.10. TimO: What kind of variability can be tolerated? e.g. how much does processing time change from exchange to exchange.
- 2.6.3.11. Unknown: Tim is looking for variability across manufacturers.
- 2.6.3.12. Darwin: The measurement of delay you use is actually the lowest delay.
- 2.6.3.13. JoeE: How do you measure further than 40 feet with a 44 MHz clock?
- 2.6.3.14. JoeK: The baseline assumption is that the processing time is invariant. Because the clocks are not locked together, so one gets dithered measurements that can be statistically culled to get the resolution needed.
- 2.6.3.15. Darwin. Yes.
- 2.6.3.16. PatC: Let's bring up Stuart's text from earlier.
- 2.6.3.17. Proposed text for TGv objectives.
- 2.6.3.18. Add the following text to the objectives document
- 2.6.3.19. • TGv should provide measurements to support higher accuracy localization over signal strength using TOA and TDOA methods.
- 2.6.3.20. • Provide Time-Stamp Differences (TSD) to enable both TOA and TDOA approaches.
- 2.6.3.21. The next slide addresses the question:
Should we modify the TGv objectives to support higher accuracy localization using TOA and TDOA methods?
Emily: TOA doesn't require ranging?
JoeK: They all require ranging.
TimO: I suggest different straw poll language. I feel uncomfortable with putting something of unknown accuracy.
PatC: Can I suggest putting together a group to reword and bring back the straw poll later?
RichardRoy: The only way this can be handled is specific designation of how you measure the range. That's the only way it can be implemented.
PatC: Is it reasonable to work out some new language from Thursday.
RichardRoy: I encourage everyone to think about good ways of doing TOA/TDOA directly.
PatC: I believe it is time to recess.

2.7. Closing

2.7.1. Recess

- 2.7.1.1. PatC: I suggest that we recess.. Is there any objection to recessing? Hearing none, we are recessed.
- 2.7.1.2. Recess at 1230.

3. Thursday Morning Session, September 22, 2005

3.2. Opening

3.2.1. Call to order

- 3.2.1.1. Pat R. Calhoun (PatC): I call the meeting to order.
- 3.2.1.2. Meeting convened at 0800 hours.

3.3. Process

3.3.1. Agenda Review

- 3.3.1.1. PatC: Other than the presentations already logged, do we have others? Yes. Simon Black indicates his contribution is not ready for presentation and will have to be postponed until the next meeting.
- 3.3.1.2. Emily Qi: We need a straw poll on Location. I also have presentation 827r3 on TGv objectives.
- 3.3.1.3. PatC: Are there any other presentations? No.

3.3.2. Presentation of Document 05/0906r0

- 3.3.2.1. Presentation of document 05/0906r0, "Spectrum Etiquette", by Roger Durand, Autocell. Spectrum etiquette will be necessary to ensure good spectral sharing as 802.11 networks expand. "e" uses temporal priority, but there are other ways of sharing. The rules for sharing are necessary because spectrum is finite and because it is a "common" resource. The 802.11 standard doesn't currently well-support sharing, and this leads to so-called "blue-on-blue" interference. How might access points work at the "super-system" level to improve spectral cooperation? Radar was addressed in 11h, but didn't work the overall problem. The combination of channel selection, load balancing, power control, and timing issues taken together can produce better performance with overlapping coverage zones compared to any of these individually.
- 3.3.2.2.
 - Channel selection: Accomplished either by using a default channel (varies by brand), Near Static (at boot-up/install), or dynamically and/or in real time. Cellular re-use with power control and good channel selection can materially improve total capacity of the network. 802.11v has accepted "dynamic channel selection" as being possibly in scope.
- 3.3.2.3.
 - Load Balancing: The default is none or clients go to strongest channel by SSID. Post past temporal usage can be gauged, it is not a good predictor of future consumption. Post number of associations or clients is another way to balance. Load balancing has ripple effect on other etiquette variables. 802.11v has accepted "load balancing" as being possibly in scope.
- 3.3.2.4.
 - Temporal Coordination in Overlapping RF coverage Zones. Need to perform time-slicing to preserve 802.11e applications. Should be capable across physical deployment boundaries (could have security implications).

- Temporal coordination increases need for network-level communications. 802.11v has accepted "time coordination" between APs" as possibly being in scope.
- 3.3.2.5. • Transmitter power control: Accomplished by default power (usually maximum), fixed vs. dynamic with one power level, or fixed vs. dynamic power control (multiple levels). 802.11v has accepted "transmit power control of station/client" as possibly being in scope. The 802.11v task group has not yet considered adjusting transmit power on the access point. This is a very important variable, since it determines coverage areas of APs. Multilevel power control is useful to ensure that only enough power is used to communicate, but not enough to build interference unnecessarily.
- 3.3.2.6. Good Neighbor vs. Rogue: It is not reasonable to treat neighbor APs like rogues. Unlicensed devices must accept interference, but "jamming" is illegal. It may be necessary to have a degree of cognition, sanity, and security awareness in exercising this coordination.
- 3.3.2.7. TimO: Concerns about internal network vs. external network organization. Which do you support?
- 3.3.2.8. RogerD: Both, as anything used externally would be useful internally, and vice-versa.
- 3.3.2.9. TimO: I have concerns about overlap coordination and security. 1% of hackers cause all of the trouble.
- 3.3.2.10. BobM: I think this is a thoughtful and important presentation. It touches on many of the issues discussed before the PAR formulation for "v". How far do you see the standard extending? Do you support means for cooperation, control language, or all the way to rules?
- 3.3.2.11. RogerD: Up to language (protocol).
- 3.3.2.12. JesseW: This is an interesting and important presentation. However, I do see some cross-domain issues. Devices in one domain need to be identified to devices not necessarily under its control. Issue is known or unknown device, and how to interact. Worried about making sure rules are obeyed with some local logical constraints.
- 3.3.2.13. Emily: I suggest you also consider peer channel assessment and energy detection.
- 3.3.2.14. Roger: I agree on the energy threshold. CCA can be determined by loading. However, moving threshold for CCA isn't a substitute for power control. Should use power control first.
- 3.3.2.15. AndrewMyles: I'm anxious to know more details on power control. TGH designed a "pinging" power control tool. Do we need any more than that?
- 3.3.2.16. RogerD: Yes. I think it addresses only one power level.
- 3.3.2.17. AndrewM: Stations A & B can adjust power between them.
- 3.3.2.18. RogerD: I thought this works only with one power level.
- 3.3.2.19. AndrewM: It allows you to arrive at any optimum power level below the maximum.
- 3.3.2.20. RogerD: I view it as more complex than that. I'd like to re-read 11h.
- 3.3.2.21. AndrewM: Wouldn't the mechanism I've described be enough?
- 3.3.2.22. RogerD: No, I think not. APs have to control all stations to prevent generating hidden nodes.
- 3.3.2.23. SimonB: Remember power control is both individual station power control and group power control. Individual power control is harder.
- 3.3.2.24. Marian: Is this an output from 11b or from several groups?
- 3.3.2.25. RogerD: I think 802.11b output with participation of other groups.
- 3.3.2.26. TimO: Can you give some examples of load-balancing interactions between two networks?

- 3.3.2.27. RogerD: We can know what traffic conditions are being handled between cells, allowing load balancing.. Offset beacons would be an example. I advocate listening rather than talking to determine loading.
- 3.3.2.28. TimO: Would we create normative text such as “you shall listen to neighbor beacon so as to ensure beacons will not to collide?”
- 3.3.2.29. RogerD: Yes. We could specify how to “walk the beacons”, *etc.*
- 3.3.2.30. TimO: Can you share models that can show that this is worth doing? I’ve seen some studies that show the benefits only appear at low loading levels, and that adjusting power at high loadings results in clients that can no longer communicate effectively with the base stations, and produce more repeats, thereby offsetting the benefits.
- 3.3.2.31. RogerD: Our studies show that the benefit can appear at higher loads as well.
- 3.3.2.32. SimonBlack: I’m confused about exactly what the power control protocols would control.
- 3.3.2.33. RogerD: Individual power control for clients.
- 3.3.2.34. FabianVaras: I think TGv would be a good place to generate spectrum etiquette.
- 3.3.2.35. EmilyQ: I am concerned about the hidden node problem.
- 3.3.2.36. RogerD: There are ways to handle this.
- 3.3.2.37. EmilyQ: This would not seem to be protocol design..
- 3.3.2.38. RogerD: I view it as up to the group about how far to go.
- 3.3.2.39. AndrewM: You want to control station power too?
- 3.3.2.40. Roger: Yes, no one does it now.
- 3.3.2.41. MartyL: It would seem that these votes are not necessary, because these items are already in scope.
- 3.3.2.42. Roger: Multilevel control isn’t spelled out. If each is addressed individually, it’s not the same as putting them together.
- 3.3.2.43. PatC: Let’s proceed to some straw polls
- 3.3.2.44. “That 802.11v terminology relative to “transmitter power control” be specifically enhanced to include the aspects of dynamic, multi-level transmitter power control”
- 3.3.2.45. PatC: Folks can vote without a voting token.
- 3.3.2.46. Yes 21, No 5.
- 3.3.2.47. “That 802.11v consider within the scope of its work on power control to specifically include both access point and station dynamic multilevel power control, to include scenario specific neighbor overlapping RF coverage zones.”
- 3.3.2.48. Roger: This only addresses station overlapping power control. The 1st straw poll passed, so the first part of the second one is redundant.
- 3.3.2.49. Yes 18, No 6
- 3.3.2.50. “That 802.11v consider within its scope an “Etiquette Document” that will enhance and extend the use of the commons presuming it addresses: Channel Selection, Load Balancing, Power Control, and Timing Issues at the super system/network level.
- 3.3.2.51. KeithAmann: It appears to me that TGv has enough work ahead of it, let alone working on material this complex.
- 3.3.2.52. Marian: I am afraid of wasting a year defining algorithms.
- 3.3.2.53. Yes 7, No 15

3.3.3. Presentation of Document 05/932r0

- 3.3.3.1. Presentation of document 05/0932r0 “Coexistence in multi-radio devices” by Simon Black, Nokia. The talk covers coexistence as not about sharing same band, but instead sharing between two radios within the same device. The presentation is based on a paper presented to TGk in Cairns. This item is in the pending work list, but is awaiting a tentative TG decision based on representative presentation.
- 3.3.3.2. PeterE: This covers unlicensed spectrum?
- 3.3.3.3. SimonB: Yes. In a multi-radio device such as GSM next to a WLAN, one could experience interference/noise floor degradation. It would be useful to exchange information regarding multi-use device performance degradations. Examples are rate adaptation, and scheduling. It may be better to reschedule for non-overlapping bursts rather than lowering the rate. In a constant noise case, it would be better to adapt the rate. In TGk we looked at ways to signal noise via the noise histogram, measured during channel inactivity. I suggest adding station performance indicator showing degradation due to a co-located radio. 802.19 might not cover all coexistence issues. Signaling STA receiver performance provides valuable info to the AP.
- 3.3.3.4. TimO: First, I'd like to hear a usage case for both radios working at the same time. Most devices would not seem to be operating simultaneously.
- 3.3.3.5. JariJokela: A good example would be the middle of a GSM call while preparing for handoff to WLAN.
- 3.3.3.6. TimO: GPRS could be use a mix of time slots at any time.
- 3.3.3.7. SimonBlack: Yes, but it would still be periodic.
- 3.3.3.8. TimO: But it could be using all eight time slots but filling only half of each.
- 3.3.3.9. PeterE: In 3GPP one of the bands is in 2.1 GHz. Also, it's TDMA. We saw this with radar systems when it was found necessary to put satellite transmissions “in between” radar interruptions. This would be great down the road in dealing with periodic interference. We have to deal with licensed and unlicensed, not like coexistence task group (19) which covers only unlicensed devices.
- 3.3.3.10. Jan: Is this coexistence or dealing with interference?
- 3.3.3.11. SimonB: I view it as dealing with devices in close proximity.
- 3.3.3.12. PeterE: 802.19 is saying Bluetooth and 802.11, for example.
- 3.3.3.13. TimO: This might include info saying when not to send?
- 3.3.3.14. TomT: Yes, but it should also say how to coordinate.
- 3.3.3.15. SimonB: I was trying to do it in the style of previous contributions.
- 3.3.3.16. MartyL: Is it an objective or a requirement?
- 3.3.3.17. Simon: I view it as an objective.
- 3.3.3.18. PeterE: I'd suggest replacing “coexistence” with “contention”.
- 3.3.3.19. BobM: Does the group feel “contention” covers scheduled conflicts as well?
- 3.3.3.20. PeterE: Yes scheduling is just time, but contention covers more dimensions: frequency, time, etc.
- 3.3.3.21. PatC: Is there any objection to substituting “objectives” for “requirements”?
No.
- 3.3.3.22. Straw Poll
- 3.3.3.23. “Add the following requirement to the TGv requirements [objectives implicitly understood] document:
- 3.3.3.24. ‘TGv shall provide a mechanism for notification of performance degradation due to contention issues in multi-radio devices’
- 3.3.3.25. Yes 21, No 0

3.3.4. Presentation of Document 05/927r0

- 3.3.4.1. Presentation of document 05/0927r0, "Control Request Frame" by Tim Olsen, Cisco. This covers the next level of detail of a protocol we might use in TGv. It is not a complete proposal, and I would welcome input. I suggest Action Frames in TGk format: Action category and action (frame). The presentation suggests new action frames under the "Spectrum Management" category. Examples include: Managed Object Request, Managed Object Response, Control Request, Diagnostic Request, Diagnostic Response, and Reserved.
- 3.3.4.2. • Managed Object Request: STA to STA, as well as any combo of AP and client STA for specific MIB data. Can be rejected if not supported or if security not assured. Shows example frame format. and elements similar to SNMP.
- 3.3.4.3. • Managed Object Response shows frame, elements, and fields similarly.
- 3.3.4.4. • Control Request : Roaming, Power Change, Other
- 3.3.4.5. A MLME Interface is shown, with a flow diagram and functional block signaling map. The presentation recommends that security should be covered, and multiple mechanisms must be available, with a generic IE capable of multiple streams e.g. community string, shared secret, certificates, etc. IE can be included per Managed Object Request.
- 3.3.4.6. Other options: SNMP over Ethernet (RFC1089), which would mean running SNMP between AP and client using data frames formed directly in the AP or client STA. All existing SNMPv2 or v3 protocol constructs could be supported.
- 3.3.4.7. EmilyQ: This presentation covers the next level down from last time?
- 3.3.4.8. TimO: Yes, I went into more detail.
- 3.3.4.9. TomT: You would have to annotate strings to make this work?
- 3.3.4.10. TimO: Yes. If we do it ourselves we wouldn't have to adopt everything in SNMP, which would lighten the load.
- 3.3.4.11. MartyL: Why have you referred to "client management" since this term is not used in the standard. I suggest either "radio" or "station" instead.
- 3.3.4.12. TimO: But we're not doing just radio or station. I would be interested to hear from the security folks for suggestions.
- 3.3.4.13. PatC: If the content were in a data frame, anyone could route these requests, requiring no additional security.
- 3.3.4.14. TimO: Whether data or control we'd still need layer 2 protection. Layer two doesn't authorize access to all parameters though. Perhaps some parameters might not need such security, but others might.
- 3.3.4.15. NancyCW: Seems like your asking for application vs. link security.
- 3.3.4.16. TimO: Yes.
- 3.3.4.17. Unknown: Would this be available over both unicast and broadcast?
- 3.3.4.18. TimO: We might have to include provision for broadcast for some parameter requests, as under some circumstances this would be useful.
- 3.3.4.19. TomT: Who originates the frames?
- 3.3.4.20. TimO: Each frame type can be designated, but in my view it's anything to anything. However entities can refuse response.
- 3.3.4.21. MartyL: What's the logic of making it look more like SNMP vs. TGk? No station uses ASM.1 From an implementation standpoint no one uses it.
- 3.3.4.22. BobOhara: The discussion seems irrelevant. In the standard, a MIB is mandatory.
- 3.3.4.23. PatC: The standard doesn't talk about exposing the MIB, though.

- 3.3.4.24. MartyL: There appears to be no over-the-air get/set process being discussed. This is like SNMP, not like "k". TGk has get and set.
- 3.3.4.25. SimonB: TGk does not offer a "general" Get, though. It's specific for particular parameters.
- 3.3.4.26. TimO: This would hopefully migrate people toward a more generalized approach.
- 3.3.4.27. MartyL: This is different for all other ones.
- 3.3.4.28. PatC: Should we have a straw poll on support for SNMP or TGk-like?
- 3.3.4.29. TimO: I'd rather have a different poll.
- 3.3.4.30. PatC: Lets recess until 1030, at which time Tim Olsen will have formulated his strawpoll. Then we'll have a Location straw poll, and then work the objectives.

3.4. Closing

3.4.1. Recess

- 3.4.1.1. PatC: Is there any objection to recessing? Hearing none, we are recessed.
- 3.4.1.2. Recess at 1000.

3.5. Opening

3.5.1. Call to order

- 3.5.1.1. Pat R. Calhoun (PatC): I call the meeting to order.
- 3.5.1.2. Meeting convened at 1030 hours.

3.5.2. Process

- 3.5.2.1. Emily: I believe we already did a straw poll on Location.
- 3.5.2.2. PatC: No. We chartered a group to cast a straw poll proposal.
- 3.5.2.3. BobOhara: [To TimO] Both action frames require association. Is this task group going to tackle management of the station before association?
- 3.5.2.4. TimO: We treat post-association because these only deal with the MIB.
- 3.5.2.5. PatC: So let's have the straw poll on Tim's item.
- 3.5.2.6. "In order to facilitate STA to STA 802.11 MIB access, should TGv provide an Action Frame based protocol or [No] should TGv support use of RFC 1089 (SNMP over Ethernet)?"
- 3.5.2.7. Yes 23, No 1
- 3.5.2.8. PatC: Is there a straw poll on Location put together by the group?
- 3.5.2.9. TimO: Yes.
- 3.5.2.10. RichardH: Does this have a privacy issue associated with it? I believe this is a huge issue.
- 3.5.2.11. JesseW: I think this is confidentiality vs. security.
- 3.5.2.12. JoeE: We have bigger issues than this.
- 3.5.2.13. RichardH: This is bigger than 802.11, it extends to IETF and a variety of other SDOs.
- 3.5.2.14. RogerD: I think the security part is beyond our scope; we are simply considering putting in the mechanism to obtain the information. Whether it is used or how it is used is not up to us.
- 3.5.2.15. RichardH: I think nevertheless that a location security mechanism should be part of the work.

- 3.5.2.16. TimO: We do have a general "Security" objectives category.
- 3.5.2.17. PatC: So let's have the "Location" straw poll
- 3.5.2.18. "Should the following text be added to the TGv Objectives document
- 3.5.2.19. 'TGv will provide a mechanism to coordinate the gathering and possibly generation of data to support various location methods such as the time of arrival, time difference of arrival, and signal strength' ?"
- 3.5.2.20. Yes 26, No 0
- 3.5.2.21. PatC: Emily, you're next.

3.5.3. Presentation of Document 05/0827r3

- 3.5.3.1. Emily: I show document 0827r3, "TGv Objectives". This document has included text from many contributors. Version 2 has been on the server since yesterday. Version 3 adds Requirement 2041 Spectrum Etiquette, Requirement 2071 Contention, and Requirement 2090 Location. The presenter explains the sections of the document, along with its organization.
- 3.5.3.2. Marian: Could we merge 2040 and 2041 to remove readability?
- 3.5.3.3. PatC: We would welcome you to contribute text.
- 3.5.3.4. RogerD: There are differences in these. One builds upon the other. I'd prefer not to.
- 3.5.3.5. Marian: Can we remove 2041 then?
- 3.5.3.6. RogerD: I'd like not to do that.
- 3.5.3.7. BobM: I suggest we keep it as it is, to preserve traceability to the individual straw poll votes in the minutes.
- 3.5.3.8. PatC: Emily, do you propose to create a motion? Yes.
- 3.5.3.9. TGv shall adopt doc# 11-05-0827r3 as TGv Objectives Document
- 3.5.3.10. Moved: Emily Qi
- 3.5.3.11. Second: [No second]
- 3.5.3.12. Rationale: Limit TGv's scope to a well-defined set of objectives
- 3.5.3.13. BobM: I congratulate Emily for doing an excellent job as editor in putting this document together, but I also feel that this motion is unnecessary. We discussed the nature of this document at length several meetings ago, and concluded that it is already an "official" document on the server, established by the editor to organize and facilitate movement toward the draft.
- 3.5.3.14. MartyL: There's no end to this. I don't understand the timeframe for closing out contributions. Everything else not already in could be ruled "out of order".
- 3.5.3.15. PatC: That's not clearly the case, as things could be added with $\frac{3}{4}$ vote.
- 3.5.3.16. MartyL: The original purpose of the document was just to get objectives organized, but this goes beyond that.
- 3.5.3.17. SimonBlack: Friendly amendment. Can I suggest that we adopt the work "initial" before "objectives document" perhaps?
- 3.5.3.18. PatC: Would that be OK, Emily and everyone? Shall we change the motion to "initial TGv objectives document"?
- 3.5.3.19. RichardH: I support the motion. This would produce a framework for working forward.
- 3.5.3.20. Emily: I want to change the motion to:
- 3.5.3.21. "TGv shall adopt doc# 11-05-0827r3 as initial TGv Objectives Document."
- 3.5.3.22. Moved: Emily Qi
- 3.5.3.23. Second: [No second]
- 3.5.3.24. JoeKwak: In previous discussions regarding governing this document we differentiated "informational" from "governing", and the membership advocated by a large margin keeping the document as a working, non-

- governing document. I agree with BobM, we don't need another governing document.
- 3.5.3.25. PatC: We formulated the document as a method of organizing our work.
- 3.5.3.26. BobM: But if made a governing document, it would also pose an additional barrier to entry of work items.
- 3.5.3.27. EmilyQ: In the past meeting, we approved this as an organizational document.
- 3.5.3.28. RogerD: If TGv desires to reduce it's scope, it should redo the PAR.
- 3.5.3.29. BobOhara: It appears to me that the task group is unwilling to set any boundaries for itself. The work thus far addresses the outer bounds of the work, but does not focus toward details. The task group's refusing to use the word "requirements" is indicative that the TG is not finding a process that leads to closure that will produce a draft in a reasonable time. The problem is indicated by the comments regarding "I don't want to be limited in what I can bring in". The group needed a process to be open-minded, but should now narrow its focus. Corporations use firm requirements mandated by bosses to maintain control and do not proceed without requirements.
- 3.5.3.30. PatC: We still have a motion on the floor: Do we have a second?
- 3.5.3.31. "TGv shall adopt doc# 11-05-0827r3 as initial TGv Objectives Document."
- 3.5.3.32. Moved: Emily Qi
- 3.5.3.33. Second: Jesse Walker
- 3.5.3.34. PatC: Is there discussion on the motion?
- 3.5.3.35. JoeKwak: Please tell me whether you consider the document in the motion informational or governing.
- 3.5.3.36. EmilyQ: Governing.
- 3.5.3.37. JoeK: Friendly amendment. Let's change the motion to clearly indicate "governing". I suggest language such as:
- 3.5.3.38. "...which will be a governing document used to limit further introduction of contributions."
- 3.5.3.39. MartyL: I'd like to respond to Bob O'hara's comment. The process by which TGn is working may not be necessary here.
- 3.5.3.40. BobM: I, too, wish to respond to Bob O'Hara's comment. Everyone who has been contributing to TGv as we have moved forward has followed the process we've been using. The fact that it has not depended upon a formal governing document has not been an impediment. Although I agree with Bob O'Hara that corporations need top-down organization, this is a standards organization and accordingly operates on a more collaborative model.
- 3.5.3.41. JoeE: Does it make sense to create the document with 50% vote, should it be a 50% vote to insert text as well?
- 3.5.3.42. RogerD: We always use the same vote to approve and amend so doing this is asking for a protest.
- 3.5.3.43. BobOhara: The bar is now at 50%. You're would seem to be asking to change the bar to 75%.
- 3.5.3.44. Schlomo: In order to get a requirements document one has to have a set of requirements.
- 3.5.3.45. JesseW: Go back to the original motion on the screen, not the second one showing $\frac{3}{4}$ vote to change the document. I have a question as seconder. I understand that this is intended to be a governing document. My understanding of JoeK's amendment is that we explicitly say this is a governing document. But I'm confused. The amendment seemed friendly, trying to clarify the motion, but was not endorsed as friendly. If someone wants to amend a motion, normally it's up to the mover. But I observe that the chair has allowed amendments in many task groups to be changed by consensus rather than the approval of the mover to speed the process.

- 3.5.3.46. PatC: In my opinion, the proposal that Joe made clarified the motion, and was coherent with your original intent [to Emily].
- 3.5.3.47. JesseW: Would the group like to accept the change?
- 3.5.3.48. PatC: Would anyone object to changing the motion indicating that it is a governing document used to limit contributions to be considered by the group?
- 3.5.3.49. JesseW: Let's try to get Joe's language in there. Then we can see if the group is willing to accept that.
- 3.5.3.50. PatC: OK Would you add text after what's there?
- 3.5.3.51. JesseW: Let's start with Joe's text.
- 3.5.3.52. Emily: "TGv shall adopt doc# 11-05-0827r3 as initial TGv Objectives Document to limit TGv's scope to a well defined set of objectives."
- 3.5.3.53. Moved: Emily Q
- 3.5.3.54. Second: Jesse Walker
- 3.5.3.55. PatC: Joe, does that do it for you?
- 3.5.3.56. JoeK: A good start, but I don't think it's complete. I am concerned about the chair ruling contributions out based on the document. We are voting on limiting the scope of what goes in.
- 3.5.3.57. Keith: We have a motion on the floor to amend. We are seemingly engaged in collaborative rewording.
- 3.5.3.58. PatC: Joe thinks its not enough. How do others feel?
- 3.5.3.59. MartyL: Will this allow the chair to deny entry to the document?
- 3.5.3.60. PatC: In my opinion, that is the correct interpretation of what this motion says.
- 3.5.3.61. Marian: I think we could make more progress if we instead discussed the rules for modifying the document before we have this motion.
- 3.5.3.62. PatC: The motion on the floor doesn't cover that, though. When I interpret the motion it is a governing document. If you try to bring in a contribution, it can be ruled out.
- 3.5.3.63. BobM: Point of order. There is a motion on the floor, with a friendly amendment in process.
- 3.5.3.64. TimO: We need to take a vote on amending the original motion.
- 3.5.3.65. PatC: We need a majority vote on the amendment. Alternatively, are the mover and seconder OK with language as stated? Undecided. Very well we shall vote on amending the motion: Yes 17, No 7 Abstain 2. The motion passes.
- 3.5.3.66. PatC: The main motion is now on the floor. Is there discussion on the motion?
- 3.5.3.67. TimO: I call the question.
- 3.5.3.68. PatC: The question has been called. We shall vote on calling the question.
- 3.5.3.69. Vote is Yes 13, No 15, Abstain 1; the motion fails, the question is not called.
- 3.5.3.70. RogerD: I am concerned about a number of things: Our intention is to impose rules via an objectives document. Acceptance criteria needs to be documented. When this document attempts to be amended the criteria will have to be met again, or protests will result. I support the thrust, if we can do it successfully. I suggest we clarify the rules for modifying the document.
- 3.5.3.71. Marian: We need to clarify how this document would be changed.
- 3.5.3.72. KeithA: I have a problem with this. The PAR should be limiting this, not this document. I don't disagree with the intent, though.
- 3.5.3.73. BobO: By adding the amendment, it appears to me that this limits the content of the draft.

- 3.5.3.74. NancyCW: The intent has been made clear by the chair of why the document is needed and how we shall proceed with it. We have to address Marian's concerns. I call the question.
- 3.5.3.75. BobO: My opinion is that this document would limit the content of the draft. So this is a technical motion.
- 3.5.3.76. PatC: Is there an objection to calling the question? No. We return to the motion. [Reads the motion]
- 3.5.3.77. The vote on the motion is: Yes 23, No 9 Abstain 2. The motion fails.
- 3.5.3.78. JesseW: I wish to move...
- 3.5.3.79. "To request the WG to request the EC to rescind TGv's PAR."
- 3.5.3.80. Moved: Jesse Walker
- 3.5.3.81. Seconded: Clint Chaplin
- 3.5.3.82. PatC: Is there discussion on the motion?
- 3.5.3.83. JesseW: I move this because the discussion we have had over this week and the last few meetings has failed to make any progress toward creating a defining document.
- 3.5.3.84. HarryWorstell: I disagree. We are working though the process, and it has been effective, but needs more work to constitute a guideline going forward. Motions like this only disrupt the process.
- 3.5.3.85. JoeE: I agree with Harry
- 3.5.3.86. MartyL: Robert's Rules and IEEE rules form a sufficient process; this document is inappropriate.
- 3.5.3.87. BobM: I repeat my previous statement: This document is in the official record and has served as an effective framework for moving forward. Making this a governing document seems unnecessary.
- 3.5.3.88. EmilyQ: I speak against the motion. There is a good motion toward the process and the framework in the document has been working.
- 3.5.3.89. Nancy: Limiting the scope is necessary, but limiting is different from defining it. I speak against the motion. There have to be some boundaries, but it doesn't have to limit.
- 3.5.3.90. JesseW: I would like to respond to the statement made earlier, "we should go to the PAR and put limitations in there." After you defeat this motion, you should reconstruct the PAR to improve it. I think a better way to proceed as the body of work grows is to shrink the breadth of its objectives as it approaches the target.
- 3.5.3.91. RogerD: I would rather that we would have amended the PAR, acknowledging the objectives to constrict us to specific elements. I am in favor of this motion.
- 3.5.3.92. TimO. I speak against the motion. However, we do need to have objectives. I call the question.
- 3.5.3.93. PatC: Is there any objection to calling the question? No. Very well, we shall vote on the motion.
- 3.5.3.94. The vote is Yes 8 No 22 Abstain 2. The motion fails.
- 3.5.3.95. JesseW: I would like to thank the TG for rejecting the motion, but feel it was useful in focusing on the necessity for moving requirements forward.
- 3.5.3.96. Schlomo: Maybe we should have a motion to amend the PAR.
- 3.5.3.97. PatC: We would not be able to complete that in the time remaining. Besides, we have other work we must complete. I would like us to review the proposed timeline. I propose to tell the WG that we are putting together a call for proposals for November 06...
- 3.5.3.98. KapilSood: I'm not clear what these targets represent. This is a collaborative effort, and is hard to predict this way.

- 3.5.3.99. MartyL: This is not like TGr and TGn, its more like TGk. There is a scope in TGk.
- 3.5.3.100. RogerD: I have to concur, because we didn't approve the objectives document, and so it's not clear what the proposals would be "on".
- 3.5.3.101. RichardH: There was no call for proposals in TGk. We had a diverse group of ideas, and it would not have been practical.
- 3.5.3.102. KapilSood: Leveraging TGk experience, we should have adopted objectives sooner. The proposals do not seem to be definite enough to provide structure.
- 3.5.3.103. PatC: I call for a show of hands. Should we interpret an "Internal" Call for Substantive Text as a TG or WG action?
- 3.5.3.104. JesseW: A third possibility exists: no call for text.
- 3.5.3.105. PatC: That would appear to be counter to the process we adopted on Tuesday, which I believe you prescribed?
- 3.5.3.106. JesseW: Yes, you're right.
- 3.5.3.107. EmilyQ: Let's propose a framework for a draft for next time.
- 3.5.3.108. SimonBlack: The last vote appeared to reject not the requirements document, but rather the way of managing and editing the requirements. What we need to do is work the requirements process.
- 3.5.3.109. Dorothy: What if you say none of the above?
- 3.5.3.110. PatC: Let's get a view of the text source vote as a straw poll:
- 3.5.3.111. TG 10, WG 5
- 3.5.3.112. JesseW: This seems like a closed process. I prefer an open one.
- 3.5.3.113. PatC: Not so, all voters are on the e-mail.
- 3.5.3.114. Dorothy: Is there a description of the process?
- 3.5.3.115. EmilyQ: 0918 details this.
- 3.5.3.116. PatC: We have only 2 minutes remaining. I suggest as goals for November:
- 3.5.3.117. • Load Balancing and Power and Rate Control, and "to SNMP or not to SNMP" via Tim Olsen/Simon Black 0629r0
- 3.5.3.118. • Presentations and associated word document text that addresses objectives (0827r3), based on the process defined in 0918r2
- 3.5.3.119. • Close on objectives in TGv
- 3.5.3.120. The vote to endorse these items was 23 Yes, No 1

3.6. Closing

3.6.1. Recess

- 3.6.1.1. PatC: I see that we have come to the end of our time. Is there any objection to adjourning? Hearing none, we are adjourned.
- 3.6.1.2. Adjourn at 1230.

1
2

IEEE P802.11 Wireless LANs

Protected Management Frames Minutes September 2005

Date: 2005-09-18

Author(s):

Name	Company	Address	Phone	email
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3

Abstract

Minutes of the 802.11 TGw Task Group meeting held during the IEEE 802 September 2005 Interim Session in Garden Grove, CA from September 18th – 23rd, 2005.

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Monday, September 19, 2005

Group: IEEE 802.11 TGw Protected Management Frames

Date: Sept. 19, 2005 – 16:00–18:00, Sept. 22, 2005 – 13:30-15:30, 16:00-18:00

Chair: Jesse Walker

Secretary: Sandy Turner

Call to Order

Meeting called to order on Monday, September 19, 2005 by Jesse Walker at 4:00 pm PST.

Chair: Go to the IEEE concierge's desk and sign in once a day. The chair reviewed slides on the following:

- Membership & Anti-Trust
- IEEE-SA Standards Board Bylaws on Patents in Standards
- Inappropriate Topics for IEEE WG Meetings
- Copyright
- Agenda (below)

TGw Agenda, Monday, September 19, 2005, 16:00-18:00			
1	Call to Order	1	16:00
2	Review IEEE 802 & 802.11 Rules and Procedures	8	16:01
3	Chair's Status and Goals for the Garden Grove Meeting	9	16:09
	Review and Approve San Francisco Minutes	5	16:18
5	Approve or Modify Agenda	10	16:23
6	Proposals: E. Qi/N. Cam-Winget, J. Edney, M. Wong	87	16:33
7	Recess until 13:30, Thursday, September 22	0	18:00
TGw Agenda, Thursday, September 22, 2005, 13:30-15:30			
8	Call to Order	1	13:30
9	Proposals: F. Watanabe, N. Cam-Winget	119	13:31
10	Recess until 16:00, September 22, 2005	1	15:30
TGw Agenda, Thursday, September 22, 2005, 16:00-18:00			
11	Call to Order	1	16:00
12	Other presentations, motions, and discussion	119	16:01
13	Adjourn	0	18:00

Chair: Any objections to adopting the agenda before you?

None.

Chair: I'd like to review and approve the San Francisco minutes. Are there any objections to approving the minutes:

- 05/812r0 July Protected Management Frames Plenary Ad Hoc Minutes
- 05/813r0 July Protected Management Frames Plenary Minutes

Chair: Hearing none, the minutes are approved. For Goals and Status, we received five Intent to Propose notices. Since then, we've had some preliminary talks amongst proposers and some progress toward

36 merging. I hope all proposals will work toward a single consensus proposal by the end of the next
37 meeting. Is there any discussion on this?

38
39 None.

40
41 Chair: Seeing none, we'll go into the proposals.

42
43 Comment: In our process, there is a step to take a straw poll at the end of each proposal.

44
45 Chair: Yes.

46
47 **Presentations**

48 Chair: Chair schedules Marcus Wong first since the other two proposals are related.

49
50 **Broadcast Management Frame Protection 11-05-0895-00 Marcus Wong et. al.**

51 Marcus Wong (MW) reviewed the proposal.

52
53 Comment: Why did you dispense with using TESLA in the standard way? On Slide 6, you can't dismiss
54 that attack.

55
56 MW: We needed to modify the protocol.

57
58 Comment: You modified it with the GTK, although someone on the inside that knows the GTK could
59 still commit the attack.

60
61 Comment: It makes it one step harder.

62
63 Chair: There is a paper by Adrian Perrig and Dawn Song (Secretary added the title later – “The TELS
64 Broadcast Authentication Protocol”) you should read. The key is sent in the same packet that protects it.
65 There are a number of interesting properties. This is a scheme that can be made to work. It needs precise
66 time boundaries for byte boundaries on each octet. Any further discussion?

67
68 Comment: Are you considering standard TESLA?

69
70 Chair: If someone brings it forward, we certainly could. Let's have a straw poll. The voting options are
71 yes, no and abstain.

72
73 **STRAW POLL: Do you want to see more of this proposal? Do you not want to see more of this**

74 **proposal? Do you want to abstain?**

75 **Results: 19 yes, 0 no, 7 abstain**

76
77 Chair: This one moves forward.

78
79 **Broadcast and Unicast Management Protection (BUMP) 11-05-0894-01 Emily Qi, Nancy Cam-**
80 **Winget, et.al.**

81 Emily Qi (EQ) will present “Design Goals and Overview and “Unicast Management Frame Protection”
82 and Nancy Cam-Winget (NCW) will present the rest of the presentation. There are some areas that are
83 still “Works-in-Progress” that will be noted.

84
85 (Slide 12)

86 Comment: What is the SA?

87
88 NCW: The SA is the STA's MAC address. The AP sends the commit value when it associates. It binds
89 the MAC addresses and the key. The commit is unique per station and the key is global and shared. I

90 have a single key. When I hash it, there is a unique hash to everyone it's servicing. When I send you the
91 broadcast, only you can validate the initial commit value during association.

92
93 Comment: How common is broadcast Disassociate and Deauthenticate? It's almost unused. Early STAs
94 will ignore these messages when they receive them.

95
96 Comment: It's legal, but only used when an AP is going down, reconfigured or rebooted.

97
98 NCW: I don't know what the industry does. In Paranoid mode, through policy negotiation, we're not
99 going to send any of the broadcasts.

100
101 Comment: Does Paranoid address other broadcast frames, like broadcast Disassociate? You might want
102 to lump it in and never use it.

103
104 NCW: I can add it as a "Work-in-Progress".

105
106 Comment: Does the AP have any assurances that the AP know that all it's STAs receive the broadcast?

107
108 NCW: The Disassociate and Deauthenticate are "fire and forget" – just like in TGk.

109
110 Comment: That doesn't prevent it from sending it again. You have disclosed the key.

111
112 Comment: You assume you don't care from a Disassociate or Deauthenticate.

113
114 NCW: True.

115
116 [Straw Poll: How many people would like to see more details on this proposal?](#)

117 [Possible voting options: Yes/No/Abstain](#)

118 [Voting result \(Yes/No/Abstain\): 32/0/0](#)

119
120 Chair: This one moves forward.

121
122 **Partial Proposal to TGw - AMID 11-05-0901-01 J.P. Edney**

123 Jon Edney (JE) reviewed the slides.

124
125 (Slide 5)

126 Comment: Each instances would have a local identity.

127
128 JE: There could be multiple instances on a local layer 2 network.

129
130 Comment: Each multiple instance would not be visible globally.

131
132 JE: The MAC does not extend beyond the layer 2 network, unless you use the MAC address as a
133 credential at layer 3 and above.

134
135 Comment: It's done frequently though. You get an IP based on a MAC.

136
137 JE: That's local. It's not used for authentication.

138
139 Comment: Why should we consider a single connection a constraint?

140
141 JE: I'm coming to that in the next slide.

142
143 (Slide 6)

144 Comment: Could that be an implementation problem?

145

146 JE: One possible solution is that when a station is associated and protected with a MAC, you could allow
147 another station to associate with the same MAC – or 10 or 20 stations – until you get to the 4-way and
148 then determine if it is valid or not. Another possible approach, from an implementation, is from my
149 experience with APs, is that a change to allow multiple STAs with the same MAC indifferent stations is
150 problematic.

151

152 (Slide 7)

153 Comment: If a station loses state when it had associated with an AP, his recourse is to invent a different
154 MAC. What's to stop just anyone from doing that? Nothing.

155

156 JE: How do I pick out existing state from the last MAC? I'll come to that soon.

157

158 Comment: The RADIUS server would not let you use the same MAC the second time.

159

160 JE: Let me get further ahead. It's transparent to the RADIUS server..

161

162 (Slide 8)

163 JE: This is a summary, except for the last bullet. The AP gets to find out what the real MAC is since it's
164 sent with confidentiality during the 4-way.

165

166 Comment: Not during AAA authentication.

167

168 Comment: EAP authentication is before the 4-way.

169

170 Comment: That's the point. The RADIUS server gets to see what the AP will see.

171

172 Comment: What about TLS? The MAC id is the real MAC.

173

174 JE: If the RADIUS server requires to bind to the real MAC, that's a different problem to solve.

175

176 Comment: That's device authentication.

177

178 Comment: Isn't the device information sent in the attribute/value pair?

179

180 JE: If you change the wireless adapter, isn't that the same thing?

181

182 Comment: If the credentials are bound to the MAC...

183

184 Comment: The RADIUS server has a policy that that's not a valid parent. You're not saying it's a
185 common policy to do that binding though.

186

187 (Slide 9)

188 Comment: 11i preauthentication uses the real MAC.

189

190 JE: In a couple slides I'll talk about TGr.

191

192 (Slide 12)

193 Comment: If there is hardware out there doing lookups of key state on received frames, you're adding an
194 indirect lookup, not a direct lookup.

195

196 JE: When you reassociate with a new AMID, you have to go through the 4-way and create new key state.

197

198 Comment: If you go through the EAP transition with the AMID, you expose the real MAC during the 4-
199 way.
200
201 JE: Use PMK caching.
202
203 Comment: Before you install the first key, would the PTK be bound to the real MAC or the AMID?
204
205 JE: There has been some discussion on this to some extent. Some people feel it should be bound to the
206 real MAC. Some feel this is not required. Should the PTK be recomputed each time?
207
208 Comment: Would the AMID be used as a source address?
209
210 JE: Yes, the AP at that level would not realize any difference.
211
212 Comment: The station would not be using the real MAC in the data frame.
213
214 Comment: That's another level of indirection in the lookup.
215
216 JE: That's incorrect.
217
218 Comment: Frames come back from the DS and are inserted at the MSDU level.
219
220 Comment: Key lookups are for encryption and decryption - that's based on the AMID. There's a
221 separation between lower layer to higher layer addresses. You're splitting layer 2.
222
223 JE: Right.
224
225 Comment: What about mobile things when I'm in AMID mode?
226
227 Comment: You cross the SAP going out. The real MAC is only at the upper layer.
228
229 Comment: When the STA creates the AMID, is this unbounded latency?
230
231 JE: For conventional roaming or transition, with no preauthentication, when it prepares to go to the new
232 AP, it picks a MAC - 48 bits - a random number. The probability of collision is almost zero.
233
234 Comment: You have a Birthday Attack on 23 bits. How much time does it take to generate that attack?
235
236 JE: At the next level up in TGr, when you preauthenticate to a new AP across the network, you do it
237 directly with the real MAC. Preauthentication with 11i will not work with this scheme. I contend its not
238 a big problem - not a lot of people are doing that and it will be deprecated by TGr.
239
240 (Slide 14)
241 Comment: I was thinking the whole idea of getting the STAs MAC address with confidentiality over the
242 air. The 11r authentication primes the key based on the MAC address. So if you're doing it over the air,
243 you choose the AMID before you start the process, how will the target AP know how to prime the correct
244 r0 key if it's not the correct source MAC address of the STA?
245
246 JE: I'll have to look at the sequence of events.
247
248 Comment: With AMIDS, have you looked at the hidden station problem? Two overlapping BSSs could
249 have stations using the same AMID. Since ACK frames only have destination addresses, both STAs
250 could receive it and not know that it came from a different BSS.
251

252 JE: That's a corner case.

253

254 (Slide 16)

255 Comment: This is an interesting area. I like the concept in general, but I'm having a hard time
256 understanding how it fits in the prevue of w. How does it protect management frames, which is the
257 charter of this group?

258

259 JE: It solves the key lockout problem, which is non-trivial to solve.

260

261 Chair: 11p has a similar mechanism to the AMID.

262

263 Comment: This is similar to the Host Identity Protocol, except for layer 2.

264

265 Comment: Go back to Slide 11 step 4. What is the destination of the failed message.

266

267 JE: The AMID.

268

269 Comment: It's in use already.

270

271 JE A station which received an unexpected MAC failure understands why it was caused.

272

273 Comment: What about probing and hidden SSIDs?

274

275 JE: I didn't talk about probing on Slide 14. When you probe, you don't have an AMID, so you use a
276 well known MAC source address. The AP would recognise this and reply with a broadcast (probe
277 response) rather than a unicast reply. All stations would see the SSID in the probe response. Hiding the
278 SSID is not considered a great security technique.

279

280 Comment: It's common none-the-less.

281

282 JE: You can snoop for any probe response and get the same information.

283

284 Comment: Probing could be done with a second MAC address.

285

286 JE: It would have to be unique for each station.

287

288 Comment: How unique?

289

290 JE: You could allocate if from a unique global pool.

291

292 Comment: That's overkill, but one way of doing it.

293

294 [Straw Poll: How many people would like to see more details on this proposal?](#)

295 [Possible voting options: Yes/No/Abstain](#)

296 [Voting result \(Yes/No/Abstain\): 28/4/4](#)

297

298 Chair: This one moves forward.

299

300 **End of Session**

301 RECESS 17:47 PST

302

303 **Monday, September 19, 2005**

304 **Call to Order**

305 Meeting called to order on Monday, September 22, 2005 by Jesse Walker at 13:32 pm PST.

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Chair: We have two presentations today.

- TKIP in 802.11w 11-05-0929-00 Nancy Cam-Winget
- PSA and PSA-D 11-05-0651-00-000w-psa-and-pas-d.ppt Fujio Wantanabe

TKIP in 802.11w 11-05-0929-00 Nancy Cam-Winget

(Slide 6)

Comment: Does w allow broadcast management frames to be encrypted in TKIP?

Nancy Cam-Winget (NCW): The broadcast mechanism is on it's own. That will apply to all broadcast management frames independent of the data. It uses AES-CMAC. As BUMP suggested on Monday, we'll only protect management frames if the data protection is CCMP. In Paranoid, if you negotiated policy is to not transmit broadcasts, BUMP is only protecting if the data protection is CCMP. This tries to broaden the coverage.

Comment: Given that many management frames are not throughput bound, you could do AES in software.

Comment: The exact nature of what to protect on management frames, brings up the fact that TKIP as defined has issues.

Comment: TKIP is MSDU based. If you go the route of trying to keep unicast management and data the same, you'll need new text to make sure everything that needs to be protected is protected. In the MSDU, only the source and destination address are protected. You want to protect more than that.

Comment. What else do you want to protect?

Comment: The frame header, frame control and addresses 1-3.

[Straw Poll: How many people would like to see more details on this proposal?](#)

[Possible voting options: Yes/No/Abstain](#)

[Voting result \(Yes/No/Abstain\): 22/0/1](#)

Chair: This one moves forward.

PSA and PSA-D 11-05-0651-00-000w-psa-and-pas-d.ppt Fujio Wantanabe

(Slide 5)

Comment: Attack 2 shouldn't happen unless the new stations becomes authenticated (after the 4-way). That attack is not possible if the AP on the right waits until after the authentication and the network switches to the DS.

Fujio Wantanabe (FW): We were thinking of the authenticated case.

(Slide 6)

Comment: When roaming, 11r has mechanisms to do the MIC you're including.

Comment: The point of this is to prevent a DOS attack. What's to prevent the DOS attacker from jamming the countermeasures – the Defence frames?

FW: We've not thought about that at this time.

359 Comment: I understand the scenarios where the station loses state, but is there a corresponding case
360 where the AP reboots and it loses state.

361
362 FW: We only assume the station rebooted.

363
364 [Straw Poll: How many people would like to see more details on this proposal?](#)

365 [Possible voting options: Yes/No/Abstain](#)

366 [Voting result \(Yes/No/Abstain\): 13/0/8](#)

367
368 Chair: This one moves forward.

369
370
371 Chair: At the end of the proposals, I'd like to make a few remarks. People want to see more details on all
372 of them. I see overlap. PSA with BUMP and AMID, Marcus with BUMP, TKIP and BUMP, AMID and
373 BUMP. As chair, I'd like to see the proposers work together to try and come up with a merged proposal.
374 The second observation is that one of the requirements in our Requirements document was not addressed
375 – the delay protection feature. Should we still consider it a requirement or come back with future
376 proposals.

377
378 Comment: The delay protection feature is highly desirable, not mandatory.

379
380 Chair: Did the proposals adequately address the range of options we're considering

381
382 Comment: Once concern is what the proposals are doing versus what other task groups are doing – like s.
383 After listening to s, I have concerns.

384
385 Chair: I do too.

386
387 Comment: They don't know what their requirements are yet.

388
389 Comment: We have our requirements, a call for proposal and proposals and now you're wondering if the
390 requirements are sufficient and the proposals are sufficient. What's going on here?

391
392 Chair: I just want a sense of the room if we are on a good track. There was one requirement nobody
393 addressed. We also only have one complete proposal, BUMP. All the others overlap with it with
394 problems solving.

395
396 Comment: Isn't that good? That should be cause for celebration.

397
398 Comment: I'm less concerned about other requirements of s and v. V is in the early stages. S is a little
399 further along. Let's not get bogged down in waiting for them to come up with requirements. Let's focus
400 on getting a proposal together and systematically making sure all the requirements are covered. If there
401 are additional security needs, they can be addressed in other task groups.

402
403 Comment: Just a thought, but have you thought about only protecting management frames and protecting
404 data with higher layer protocols?

405
406 Comment: We decided to build on top of i. If we tried to delete the sections that protect the data, that's
407 difficult. We would need consensus that that's an important feature. Someone said TKIP is important
408 and we needed to address that. If someone wants to bring a submission, they can justify that need.

409
410 Comment: This group has been very engaged in defining the requirements and going through the process.
411 I'm happy with what we're doing.

412

413 Comment: Another solution is to just turn on both to protect the data (11i plus something like ipsec).
414
415 Comment: You could have vendor specific cipher suites – no on data and yes on management.
416
417 Chair: Any other topics?
418
419 Comment: I’ve got a question about management frames and priority.
420
421 Comment: What does 11e allow for different priorities and reordering of management frames?
422
423 Comment: If you wanted to allow management frames ad different priorities, you need to add some field
424 in the management frame to say what the priority is and what nonce and replay. I can’t believe you’d go
425 to that much effort. QoS fields are only in the data.
426
427 Chair: Is there anything the task group can do to help merge the proposals – like setting up a conference
428 call for people with proposals to talk on how to merge?
429
430 Comment: We have a lot of conference calls going on. Let’s not set up any more.
431
432 Chair: Any further thoughts on this?
433
434 None.
435
436 Chair: Is there any other business to consider?
437
438 None.
439
440 Chair: Seeing none, is there any objection to adjourning?
441
442 None.
443
444 Chair: Hearing no objections, we’re adjourned.
445
446 **End of Session**
447 ADJOURN 14:28 PST
448 **End of Meeting**

449 **References:**

**IEEE P802.11
Wireless LANs**

Contention-Based Protocol SG GG September Minutes

Date: 2005-09-19

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Abstract

Minutes of the 802.11 Contention Based Protocol Study Group, September 2005, Garden Grove, CA

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Contention Based Protocol Study Group Meeting Minutes
Monday, September 19, 2005
Wireless Interim Meeting - Garden Grove, CA

Meeting called to order by Peter Ecclesine at 10:35 AM. Don Berry – recording secretary

- Review 802 PnP in document 802.11-05/919r0
- Is there anyone not aware of or does not understand IEEE 802 policy? No one indicated lack of awareness
- Review CBP SG agenda
- Documents contained on memory stick being passed around room
- September Interim meeting agenda approved by unanimous consent
- Minutes from July 2005 plenary approved by unanimous consent

Hurricane Katrina update: FCC to establish homeland security bureau. Search FCC [http://gullfoss2.fcc.gov/prod/ecfs/comsrch_v2.cgi] Proceeding 04-151 for communications with FCC on the 3650-3700 MHz R&O. The situation/law on WTB and 3650MHz is unclear and unlikely to change before November.

Call for submissions and contributions

Minutes approved from teleconference of 8/24/2005 by unanimous consent

Work on 05/565r1 - PAR and 05/351r4 Five Criteria

- Revise dates to reflect ISO standard dates and push out dates and including additional similar project language in PAR item 17. Save as 05/565r2.
- No changes necessary to 5 Criteria document

MOTION:

- **Send 11-05/0565r2 draft PAR and 11-05/0351r4 Five Criteria draft to Excom, subject to a .11 WG confirmation vote in November Plenary**

Moved: Don Berry

Seconded : Narasimha Chari

Yes:8 No:0 Abstain:1

Motion passed

Propose SG plans;

- Review SG PAR document 05/565r2 Item 14 for guidance in moving forward.
 - 802.16h PAR may be amended to include CBP items. See WiMax Forum reply.
 - 802.22 has work items around CBP as well.
- Continue with bi-weekly calls as authorized in July Plenary. Next calls October 19th and November 2nd. Peter to send notification on reflector.
- Peter will submit some text as starter based on documents 11-05/353, 11-05/354

MOTION:

Motion to adjourn

Moved: Rodger Durand
Seconded: Chris Hartman

Yes: 7No: 0Abstain:0

Motion Passed

Session ended Monday, September 19, 2005 12:00 PM

Attendee	Primary Working Group Affiliation
Osama Aboul-magd	.11
Suman Banerjee	.11
Don Berry	.11
Amalavoyal Chari	.11
Roger Durand	.11
Peter Ecclesine	.11
Mark Emmelmann	.11
Tom Godfrey	.11
Chris Hartman	.11
Suman Sharma	.11
Steve Shellhammer	.19
Lily Yang	.11

References:

- **Minutes for the telecons:**
 - 11-05-0331-00-0000-cbp-sg-telecon-minutes-6-april.doc
 - 11-05-0336-00-0000-cbp-sg-telecon-minutes-13-april.doc
 - 11-05-0344-01-0000-cbp-sg-telecon-minutes-20-april.doc
 - 11-05-0349-01-0000-cbp-sg-telecon-minutes-27-april.doc
 - 11-05-0556-01-0000-cbp-sg-telecon-minutes-4-may.doc
 - 11-05-0527-02-0000-cbp-sg-telecon-minutes-25-may.doc
 - 11-05-0564-00-0000-cbp-sg-telecon-minutes-8-june.doc
 - 11-05-0604-00-0000-cbp-sg-telecon-minutes-15-june.doc
 - 11-05-0616-00-0000-cbp-sg-telecon-minutes-22-june.doc
 - 11-05-0671-00-0000-cbp-sg-telecon-minutes-13-july.doc
 - 11-05-0847-01-0000-cbp-sg-telecon-minutes-24-august.doc

- **Minutes for the Sessions**
 - 11-05-0484-00-0000-cbp-sg-cairns-may-minutes.doc
 - 11-05-0795-01-0000-cbp-sg-sf-july-minutes.doc

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IEEE P802.11 Wireless LANs

JTC1 SC6 Ad Hoc Meeting Plenary Minutes September 2005

Date: 2005-09-18

Author(s):

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Minutes of the 802.11 JTC1 SC6 Ad Hoc Committee meeting held during the IEEE 802 September 2005 Interim Session in Garden Grove, CA from September 18th – 23rd, 2005.

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Monday, September 19, 2005

Group: IEEE 802.11 JTC1 SC6 Ad Hoc

Date: Sept. 19, 2005 – 10:30–12:30, Sept. 20, 2005 – 13:30-15:30

Chair: Jesse Walker

Secretary: Sandy Turner

Call to Order

Meeting called to order on Monday, September 19, 2005 by Jesse Walker at 10:30 am PST.

Chair: Remember to sign in once a day. The chair reviewed the following slides:

- Membership & Anti-Trust
- IEEE-SA Standards Board Bylaws on Patents in Standards
- Inappropriate Topics for IEEE WG Meetings
- Copyright
- Agenda (below)

JTC1 Ad Hoc Agenda, Monday, September 19, 2005, 10:30-12:30			
1	Call to Order	1	10:30
2	Review IEEE 802 & 802.11 Rules and Procedures	8	10:31
3	Chair's Status and Goals for the Ad Hoc Meeting	9	10:39
	Review and Approve San Francisco Minutes	5	10:48
5	Approve or Modify Agenda	10	10:53
6	Address Issues Arising from JTC1 meetings	87	11:03
7	Recess until 13:30, Tuesday, September 20	0	12:30
TGw Agenda, Tuesday, September 20, 2005, 13:30-15:30			
8	Call to Order	1	13:30
9	Address Issues Arising from JTC1 meetings	119	13:31
10	Adjourn	1	15:30

Comment: You should do a global replace on TGw.

The Chair showed a slide with the following goals for the meeting:

- Develop letter to JTC1 Secretariat requesting that IEEE 802.11 WG be the Registration Authority for ISO/IEC Std 8802-11
- Work in ad hoc session to develop guidance on simultaneous 802.11i/WAPI fast track ballots

Chair: Are there any comments on the minutes?

Comment: The July Closing Report header says "May 2005" instead of "July 2005".

Chair: Instruct the editor to update the July Closing Report. Are there any comments on the July Minutes, 11-05-0821-00-0jtc-jtc1-ad-hoc-meeting-minutes-july-2005.doc?

None.

Chair: Are there any objections to approving the minutes?

None.

43 Chair: The minutes are approved. Are there any changes to the agenda?

44

45 None.

46

47 Chair: Hearing none, the agenda is approved.

48

49 **Address Issues Arising from JTC1 meetings**

50 Key points of the discussion included:

- 51 • The Chair gave a recap of the August ISO/IEC meetings in Beijing, China and St. Paul de Vence,
52 France.
- 53 • The Chair asked the Ad Hoc group if the following approach was acceptable to meet the goals of
54 the meeting. It was accepted.
 - 55 ○ He asked for a volunteer to help draft a letter an a motion to bring into the meeting
56 tomorrow to request IEEE 802.11 to become the Registration Authority for 802-11.
 - 57 ○ He asked to work in ad hoc mod on improvements to a guidance document
- 58 • The Chair asked if there were any objections to recessing in ad hoc mode. There was none.

59

60 RECESS 10:50 PST

61

62 **Tuesday, September 20, 2005**

63 **Call to Order**

64 Meeting called to order on Tuesday, September 20, 2005 by Jesse Walker at 13:30 PST.

65

66 The Chair reviewed the goals of the meeting:

67

- 68 • Develop letter to JTC1 Secretariat requesting that IEEE 802.11 WG be the Registration Authority
69 for ISO/IEC Std 8802-11
- 70 • Work in ad hoc session to develop guidance on simultaneous 802.11i/WAPI fast track ballots

71

72 **Address Issues Arising from JTC1 meetings**

73 **Liaison Document 11-05-0953-01-0jtc-IEEE-802-11-Liaison-Letter.doc**

74 Key points included:

- 75 • The Ad Hoc group reviewed and fine tuned the letter.
- 76 • The following motion was approved:

77

78 [Motion: Accept 05/953r1 and forward it to the WG for approval](#)

79 [Mover: Andrew Myles](#)

80 [Second: Bruce Kraemer](#)

81 [Type of motion: Motion](#)

82 [Voting result \(Yes/No/Abstain\): 14/0/0](#)

83 [Result of the motion: Pass](#)

84

85 **Guidance Document 05/967**

86 Key points included:

- 87 • The Ad Hoc group reviewed and fine tuned the document.
- 88 • The following straw poll was taken:

89

90 [Straw Poll: Everyone in favour of making this an official document](#)

91 [Possible voting options: Yes/No/Abstain](#)

92 [Voting result \(Yes/No/Abstain\): 6/0/6](#)

93

- 94 • A comment was made that when there was not clear consensus, you should ask the Abstain voters
95 why they voted as they did. The Chair then went around the room doing this.

- 96 • The following motion was approved:
97

98 Motion: Propose JTC1 Ad hoc accept document 11-05-0967 as descriptive of the JTC1 Ad Hoc's position
99 and ask the 802.11 WG to adopt it as the WG's position

100 Mover: Bruce Kraemer

101 Second: Donald Eastlake

102 Type of motion: Motion

103 Voting result (Yes/No/Abstain): 12/0/0

104 Result of the motion: Pass
105

- 106 • Stuart Kerry was asked to come to the meeting to see if there was time for the motion to be
107 presented at the Wednesday Mid-week Plenary. He said there was.
- 108 • The Chair asked if there was any objection to adjourning. There was none.
109

110 ADJOURN 15:24 PST
111

112 Attendees

113
114 Nancy Cam-Winget

115 Todor Csokler

116 Keith Amann

117 Clint Chaplin

118 Alex Cheng

119 Jon Edney

120 Lars Falle

121 Karen Kenney

122 Bruce Kraemer

123 Andrew Myers

124 Andrew Myles

125 Paul W. Panish

126 Henry Ptasinski

127 Dorothy Stanley

128 Fabrice Stevens

129 Clifford Tarares

130 Jerry Thrasher

131 Tom Tsovlogiannx

132 Sandy Turner

133 Jari Vainileka

134 Jesse Walker
135

136 References:

IEEE P802.11 Wireless LANs

Minutes of IEEE 802.11 WNG SC September 2005

Date: 2005-09-20

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Abstract

Minutes of WNG SC meeting held during the IEEE 802 Plenary in Garden Grove, California, USA from September 19 – 23rd, 2005.

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Afternoon session Monday 16:00 – 18:00***Logistics and Agenda (11-05-0913r0)***

WNG Meeting called to order by the chairman TK Tan (Philips).

The objectives of the session and 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.

Attendance issues for this week only were explained by TK Tan. The agenda was reviewed (11-05-913r0) the minutes of the July 2005 meeting (11-05-727r0) were approved. Motioned by TK and seconded by Darwin Engwer.

IEEE 802.1 AM PAR Comments (11-05-892r1) – Peter Ecclesine

WNG SC launched right into discussion of the IEEE 802.1AM PAR. Peter Ecclesine gave a presentation using the excel spreadsheet 11-05-0892-01-0wng-dot1am-work-sizing.xls, 11-05-0908-00-0wng-dot1am-management-par-5c.doc and powerpoint 11-05-0907-00-0wng-dot1am-management-plane.ppt.

He enumerated the benefits of looking at all 3 planes: control, user and management plane. He emphasized that as radio operation and regulation are expressed in terms of time, space, frequency, code and power, it is useful to look at those dimensions in the approved standards and the ones under development.

He also pointed out that the management dimension is missing from IEEE 802. After several rounds of discussion it was agreed that the approach outlined is a good one and that we should fill in the rest of the spreadsheet to get a better understanding of what parameters can be and should be managed.

Morning session Tuesday 08:00 – 10:00***FMCA Overview (11-05-871r0) - Rodrigo Donazzolo***

Various documents from the FMCA web site <http://www.thefmca.com>

Documents invalid due to disclaimer.

11-05-0946-00-0wng-CSMA-MPR-MUD.ppt - Douglas Chan

MPR (multipacket reception channel model)

Presentation looks at this technique over a CSMA channel and indeed IEEE 802.11 PHY layers can support this mode.

MPR could improve IEEE 802.11 throughput, and hence why not add this to future IEEE 802.11 technology. However, this would require changes to the PHY and there is a possibility that changes could be made to IEEE 802.11n.

Improvements only work with additive modulation schemes, which IEEE 802.11 PHY layers use.

Can add another layer MUD (Multiuser Decoding) to implement this. There are some similarities with some of the ideas appearing in TGn.

Also some new ideas about optimizing the MAC layer for IEEE 802.11 PHY (Presentation suggests that current MAC layer is sub-optimal)

Question: Is MUD really above MAC?

Douglas: Slide 13, along as it's above the PHY it should be ok.

Q: How can the interleaver be random?

D: Random is based on a distribution (pseudo-distribution)

Q: PHY simulations, 10 users give -10dB SNR at the receiver. Hence need more robust modulation scheme to counter this.

D: If SNR decreases, then BER will also decrease.

Q: Yes, but this is then becomes interference limited as the SNR decreases.

D: It depends on how 'strong' the coding is. You need a strong code to combat the low SNR.

Q: Let's talk offline

Q: What happens to performance when you consider imperfections in the channel.

D: Not simulating for a specific scheme, it's just for each BER. It uses channel estimates based on a single user. Not simulating for a particular code.

Q: It looks like the code expansion factor of 1 gives the best result (slide 19).

D: This is an upper bound curve, and is actually impossible to achieve.

Q: But why continue to increase the code expansion factor, as the results get worse.

D: Sure, the results just show what happens, although a larger code expansion factor means less iterations in the receiver unit.

Q: You have assumed 25 users. Therefore 'goodput' per user is not so good.

D: I have only determined the 'goodput' for the channel.

Q: Yes, so the 'goodput' per user goes down. But surely we don't divide by 25?? However, it is a very fair system.

Q: On slide 8, what is on the X axis? Doesn't this say that as the number of users increases, the throughput goes up? Also why does MPR have to be an integer?

D: MPR strength is the number of users who have good current sessions, other users on the system are assumed to transmit corrupted packets. It is a very simple model. So MPR = number of users who can transmit. The linear relationship only works for this simple model. I'm sure it's not linear in practice. Additionally the MPR can be any floating point value.

Q: What are the advantages? Protection against short term transients. You can have multiple clients transmitting simultaneously, in an ordered fashion.

D: No DPSK system will work. It must not be a differential phase system

Q: Ok, so this then requires a considerable change in the IEEE 802.11 PHY.

D: Sure, the complexity issue is a big obstacle here. But the complexity of terminals is still rapidly increasing and so it should be possible soon.

802.11 for video transmission: 11-05-910r1 - Todor & Clifford

This presentation looks at a 2 dimensional QoS model, for video traffic. It also looks at home networking scenarios and issues concerning the use of IEEE 802.11e.

This presentation builds on an earlier presentation from the July 2005 meeting.

The 2nd half goes on to discuss a direct link mode selection mechanism. This performs a link assessment and looks at the intended traffic profile, prior to assigning the QoS capability.

They have plans to return in the November 2005 meeting.

Question: How does the QoS co-operation

Clifford: We have not described this, this time.

Todor: In the previous presentation, we mentioned our FEC schemes.

Q: But not the link between 11e and your scheme?

C: Not so sure

Q: So what is the problem with IEEE 802.11e

C: We have only looked at one mode within IEEE 802.11e

Q: I'm confused by the direct link model. How do you optimize the resources you have. What happens when you put more APs in the system? It appears that the problem space is quite large.

T: Yes, I agree that the problem is big, and so we have only settled on a few scenarios.

C: Using a centralized control manager was the only way to provide adaptive rate control of the MAC layer in the home network.

Q: How do you do this in a PHY independent way? For example, future PHYs may have more dimensions than what we have now (e.g. power saving modes).

T: Good question. We need to look at this further. We currently have media specific requirements and this is what we have been working with.

Q: This question must be answered during the specification of .11n

T: Sure.

Q: What are the enhancements you are suggesting?

T: It is the adaptive adjustment mechanism that is currently missing from .11e, which needs to be added.

Q: Why not do this at a higher layer.

T: We have not considered that.

Completion of WNG meeting

Motion to adjourn

Proposer: TK Tan

Secunder: Roger Durand

Move to adjourn, no objections, session adjourned.

Minutes Not Yet Available