
**IEEE P802.11
Wireless LANs**

Tentative Minutes of the IEEE P802.11 Full Working Group

July 10 - 14, 2000

Hyatt Regency La Jolla, La Jolla, CA

Opening Session: Monday, July 10, 2000

Meeting called to order by Stuart Kerry at 1300 hrs. Agenda of 62nd session of 802.11 is in doc.: IEEE P802.11-00/179.

Introduction**Objectives for this meeting:**

- Report on progress of 802.11b-cor1 compilations, public notice to web
- TGd – review letter ballot results, send draft to sponsor ballot.
- Continue work on 802.11e MAC enhancements – requirements, evaluation/testability, simulation.
- TGf – finalize functional requirements. IAPP call for papers
- Study Group on HRB SG. Progress towards PAR for TGg
- Marketing Group – establish joint meetings with 802.11 / 15 / 16. Discuss 99-231 NPRM
- Regulatory Ad-Hoc – send letters to ETSI/BRAN and other agencies as needed
- Administrative - Work on 802.11 rules.

1.1. Review of Agenda

Tutorials – OpNet demonstration, Monday evening. Demonstration of Framemaker Tuesday.

1.2. Secretary, Document Officer, Attendance Book Officer

Tim Godfrey, Secretary is present and ready to take the minutes.

Harry Worstell, Document Officer

Dennis Kuahara, Attendance Book Officer

1.3. Roll Call

The 116 people in the room introduced themselves.

First time attendees 34.

1.4. Voting Rights

Stuart Kerry summarized the regulations regarding voting rights.

Participation in debates, moving and seconding, is only permitted by voting members, in all 802.11 meetings (at all levels of Plenary and Working Group).

- Chairs may permit observers to participate in debate
- In study groups all attendees have voting rights.

To become a voting member and to maintain voting member status:

- Participate in at least 2 out of 4 consecutive plenary meetings. An initial non-voting member obtains voting rights at the third meeting.
 - One interim may be substituted for a plenary

- Participation in at least 75% of each meeting, in the room
- Voting members will get a token to be used at votes

All members have voting rights at task group meetings

Voting rights may be lost:

- After failing to pay the conference fee
- After missing two out of three consecutive letter ballots

Current member status:

- Voting members: 73 at the beginning of this meeting
- Nearly voting members: 12
- Aspiring voting members: 121

1.5. Attendance List; Registration

- Attendance List: The attendance list has to be recorded for voting membership registration. It was circulated with Dennis Kuahara supervising.
- Members should verify their E-mail and addresses.

1.6. Registration

1.6.1. Over 600 pre-registrations

1.7. Logistics

- (a) Coordinator – Face to Face Events
- (b) Breaks: Coffee breaks are listed in the Agenda for 1000 and 1500. There is continental breakfast free for registered attendees. Lunches from 1200-1300.
- (c) Documentation:

1.8. Documents

- Document distribution: Dissemination of documentation is via electronic file distribution controlled by Harry Worstell. Two mediums only will be used. They are 1) 802.11 network and 2) flash memory cards.
- All files must use the IEEE P802.11 templates for Word documents and PowerPoint. Stuart Kerry explained how to properly name and enter information into the documents including the document information, headers and footers. For presentations it is necessary to view header and footer, and slide master and update the date, name and document number.
- Documents must be in MS Office 97 format, not PDF.
- Inter – meeting documents must be sent directly to Harry Worstell, not only the reflector.
- Documents must be available on the network a meeting session before the agenda item is presented.

1.9. IEEE Patent Policy

Stuart Kerry, 802.11 Chair, explained the IEEE Patent Policy as per Clause 5 of the IEEE Standards Board Bylaws. He specifically asked attendees to notify the Working Group if they know about patents or patent applications that are (or may be) required to implement the standards, so the Chair can send out letters to patent holders to request the appropriate IP statements.

1.10. Individual Representation

All attendees are representing themselves as individuals and not companies and/or any special organization.

1.11. Anti-Trust Laws

Discussion of price is disallowed in 802.11 sessions due to the threat of price fixing. Price fixing discussions are governed by Anti-Trust Laws and are illegal.

1.12. Copyrights

If you know of copyrighted or proprietary material that is in the standard as we have drafts now, please let the group know so the Chair has the opportunity to request release.

Standards Publication shall constitute a "work made for hire" as defined by the Copyright Act. IEEE owns the copyright of the standards publication.

1.13. Other Announcements**1.14. Quorum Check**

- 1.14.1. By definition we have a quorum at plenaries
- 1.14.2. Count of voting members - 55

1.15. Approval of Minutes from Albuquerque

- 1.15.1. Document 00/058r1.
- 1.15.2. Moved Amar Ghori
- 1.15.3. Second David Skellern
- 1.15.4. No discussion
- 1.15.5. Vote – motion passes 41:0:3

1.16. Approval of minutes from Seattle

- 1.16.1. Document 00/116
- 1.16.2. Moved Vic Hayes
- 1.16.3. Second Victoria Poncini
- 1.16.4. Vote – motion passes 27:0:3

1.17. Reports

- 1.17.1. Excom
 - 1.17.1.1. Disbanded 802.8 and 802.5
 - 1.17.1.2. HRb study group will become task group G
- 1.17.2. Regulatory Ombudsman
 - 1.17.2.1. Align rules with 802.11
 - 1.17.2.2. Define Rules for Entity Position Statements.

1.18. Review of Contributions

- 1.18.1. Document list from web site
- 1.18.2. Documents from 138 through 184 are new, submitted between meetings.
- 1.18.3. Discussion
 - 1.18.3.1. When will server be updated? ASAP
 - 1.18.3.2. If documents are present now, the flash cards and server have a folder called TO_DOC_KEEPER. Put them there, and they will be posted.
 - 1.18.3.3. Question of mechanics of pre-meeting document availability.
- 1.18.4. Any new documents?
 - 1.18.4.1. IP statement from Philips on OFDM , Atul Garg, - 187
 - 1.18.4.2. OFDM in the 2.4GHz band, for HRSG, Jan Boer, 188
 - 1.18.4.3. TPC for 802.11 wireless LAN, TGe, Mika Kasslin, Nokia, 190
 - 1.18.4.4. DFS for 802.11 wireless LAN, TGe, Mika Kasslin, Nokia, 191
 - 1.18.4.5. Change to title of doc 163: Extensible Security
 - 1.18.4.6. One Global Standard for Wireless LAN?, WG, Harold Teunissen, Lucent, 192
 - 1.18.4.7. Channel Model and its implementation using Opnet, Raju Gubbi, Sharewave, 193
 - 1.18.4.8. Collision avoidance in overlapping BSS's in 802.11. Sunghyun Choi, Philips, 194

- 1.18.4.9. Dynamic Channel Selection Scheme for 802.11. Sunghyun Choi, Philips, 195
- 1.18.4.10. TGe Metrics and Criteria Ad Hoc Group Summary Report. Greg Parks, 196
- 1.18.4.11. HRBSG Status and Information, Matt Shoemake, 197
- 1.18.4.12. HRBSG Draft Call for Proposals, Matt Shoemake, 198
- 1.18.4.13. HRBSG tentative agenda, Matt Shoemake, 199
- 1.18.4.14. Public Key Cryptography in 802.11, Ron Brockmann, NWN, 200
- 1.18.4.15. Progress Report, Task Group E Simulation Ad Hoc Group. Evan Green, Intel, 201
- 1.18.4.16. Frequency Domain Modulators for 802.11B. Mark Webster, Intersil, 202.
- 1.18.4.17. Technical Feasibility of OFDM for HRB, Mark Webster, Intersil. 203
- 1.18.4.18. (untitled) Menzo Wentink, NWN 204
- 1.18.4.19. Multimedia Wireless MAC Extension for 802.11 Albert Banchs, NEC. 205
- 1.18.4.20. HRB performance requirements: PHY overhead and data rates. Jerry Loraine, Microlinear) 206
- 1.18.4.21. QoS Enhancement Proposal (Alan Winkowski, Breezecom). 161
- 1.18.4.22. Comments on 802.11d-D1.9 LB22 (Al Petrick) 207
- 1.18.4.23.

1.19. Adoption of Agenda

1.19.1.	Motion to adopt agenda 00/179 as presented
1.19.1.1.	Motion ID 222
1.19.2.	Moved John Faketselis
1.19.3.	Seconded Greg Parks
1.19.4.	Discussion
1.19.4.1.	Issue with TGf rooms – to be announced
1.19.4.2.	Vic Hayes - Additions to agenda in New Business
1.19.4.2.1.	Response to ISO vote on 802.11B
1.19.4.2.2.	Telcom minutes and use – reflector
1.19.4.2.3.	802.11 drafting of health and safety postion.
1.19.4.2.4.	
1.19.5.	Vote : 46:0:0

1.20. Unfinished Business

- 1.20.1. TGb-COR1
 - 1.20.1.1. Victoria resigning as chair
 - 1.20.1.2. Nomination of Carl Andren as chair
 - 1.20.1.3. Second Vic Hayes
 - 1.20.1.4. Carl Andren accepted by unanimous consent
- 1.20.2. TGd
 - 1.20.2.1. Letter Ballot 22 passed unanimously
 - 1.20.2.2. Only editorial comments.
 - 1.20.2.3. Editorial comments will be processed to produce draft 2.0.
 - 1.20.2.4. Forward to Executive Committee for Sponsor Ballot
 - 1.20.2.5. Tuesday session of TGd will be cancelled.
- 1.20.3. TGe

- 1.20.3.1. Focus on working group draft on requirements, evaluation criteria, and simulation.
- 1.20.3.2. There are also a number of papers that have been submitted.
- 1.20.3.3. TGe may need to request more meeting time.
- 1.20.3.4. There were three ad hoc teleconferences. Reports will be made in the TG sessions.
- 1.20.4. TGf
 - 1.20.4.1. Finalize functional requirements for TGf
 - 1.20.4.2. Show of hands of expected attendees to TGf – approximately 21
- 1.20.5. HRbSG
 - 1.20.5.1. Get PAR and 5 criteria approved.
 - 1.20.5.2. Put together a press release
 - 1.20.5.3. Press release
 - 1.20.5.4. Requirements and Selection process
 - 1.20.5.5. Presentation of papers.
 - 1.20.5.6. Documents 197, 198, 1999
- 1.20.6. Marketing Ad Hoc
 - 1.20.6.1. Joint meeting with 802.15 on Tuesday
 - 1.20.6.2. Discuss positioning of 2.4GHz vs 5GHz
 - 1.20.6.3. Draft press release regarding FCC NPRM
 - 1.20.6.4. Marketing presentation for general use of group.
- 1.20.7. Regulatory
 - 1.20.7.1. Document available as 182.
 - 1.20.7.2. Submit presentation to UK-RA on 5GHz plan – presentation given June 2nd. Paper 183. TPC and DFS required for Europe.
 - 1.20.7.3. Received paper on sharing of RLANs with satellites.
 - 1.20.7.4. WARC 2003 agenda – global 5GHz band, requires wide support from industry.
 - 1.20.7.5. Rules for IEEE require documentation of rules for submission to governmental bodies.
 - 1.20.7.6. Work for this meeting:
 - 1.20.7.6.1. response to ETSI bran
 - 1.20.7.6.2. submission to US group ITU for RLAN interference with satellites
 - 1.20.7.6.3. RF lighting
 - 1.20.7.7. Count of attendees for Regulatory – 11
- 1.20.8. Ad Hoc 802.11 operating rules group
 - 1.20.8.1. Will be generated off-line and posted to web site
- 1.21. New Business**
 - 1.21.1. Joint Standards – interworking with ETSI BRAN, IEEE, and MMAC.
 - 1.21.1.1. Document 192
 - 1.21.1.2. One Global Standard for Wireless LANs?
 - 1.21.1.3. Proposes study group to investigate convergence of 80211 and Hiperlan.
 - 1.21.1.4. Interest level – 15 people
 - 1.21.1.5. Members in favor of Ad Hoc Group with Harold as the Chair, to meet this week, and report at final plenary.
 - 1.21.1.6. Harold is not IEEE member, so he cannot chair this Ad Hoc
 - 1.21.1.7. Vic Hayes will chair the Ad Hoc.

- 1.21.1.8. Report at 3:30 Wednesday.
- 1.21.2. Web Site Interaction and Use
 - 1.21.2.1. Availability of individual documents and well as combined ZIP archives.
 - 1.21.2.2. See Stuart for other issues.
 - 1.21.2.3. Motion – that 802.11 recommend to ExCom that Internet access is mandatory at all Plenaries.
 - 1.21.2.3.1. Motion ID 223
 - 1.21.2.3.2. Moved Peter Ecclesine
 - 1.21.2.3.3. Seconded Sid Schrum
 - 1.21.2.3.4. Discussion
 - 1.21.2.3.5. What would the cost be?
 - 1.21.2.3.6. Vote – 35:0:6
- 1.21.3. Office 2000 Straw Poll
 - 1.21.3.1. Office 97 – 28, Office 2000 – 60
- 1.21.4. 802.11b
 - 1.21.4.1. Motion to recommend and approval vote for the ISO version of 8802-11 amd2 and to submit the 802.11b-cor1 as comments to the ISO 8802-11 amd2 document, and additional posting of the comments to the 802.11 web site.
 - 1.21.4.1.1. Motion ID 224
 - 1.21.4.1.2. Moved Victoria
 - 1.21.4.1.3. Seconded Vic Hayes
 - 1.21.4.1.4. Vote – motion passes 35:0:7
- 1.21.5. Telcom meetings and use
 - 1.21.5.1. Ad Hoc group for administrative procedure for teleconferences
 - 1.21.5.2. 6 interested participants, Chair to be Peter Eccelsine. Report on Thursday.
- 1.21.6. 802.11 Health and Safety Position statements
 - 1.21.6.1. Concern and complaints about safety of RF technology.
 - 1.21.6.2. Looking to make a statement on RF safety for 802.11.
 - 1.21.6.3. Discussion
 - 1.21.6.3.1. This has been an issue in the cellular business. There is no technical substance to the claims. We need to prepare for the move of 802.11 into the home. We should not be reactionary, but proactive. Consult with Electromagnetic Energy Association for possible presentation. WWW.Elecenergy.com
 - 1.21.6.3.2. How can the IEEE take a position, and accept the legal implications? They could open the organization up to suits.
 - 1.21.6.3.3. The IEEE already has standards in other non-802 standards on non-ionizing radiation that may be of use.
 - 1.21.6.3.4. We need to define what is meant by position. This should not be an opinion.
 - 1.21.6.3.5. Cellular manufacturers do perform tests on electromagnetic absorption. Different 802.11 vendors could have wide differences in energy. Is a blanket statement needed, or is individual testing required?
 - 1.21.6.3.6. What can we really do to help, since the issue is not entirely rational? What is the loss to the cellular industry because of this issue?
 - 1.21.6.3.7. What about cordless phones? They are more analogous?

- 1.21.6.3.8. The issue of a common band with microwaves. Perhaps we could dispel this myth about 2.4GHz at least.
- 1.21.6.3.9. Interest in ad-hoc group

1.22. Adjourn for Sub Groups at 3:45PM

802.11 / 802.15 7th Joint Session, July 12, 2000**1.1. Called to order 1:00PM by Bob Heile, chair 802.15****1.2. Roll Call**

- 1.2.1. Primarily 802.11 – 98
- 1.2.2. Primarily 802.15 – 61
- 1.2.3. First Time at an 802 meeting – 51
- 1.2.4. Attendance at this 802 Plenary – over 800

1.3. Approval of Minutes of previous meeting

- 1.3.1. Done by 802.11 and .15 at opening plenaries

1.4. Agenda Review

- 1.4.1. Contained in document 179, slide 40

1.5. Approval of Agenda

1.5.1. Motion : To approve joint 802.11 and 802.15 agenda as presented.

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| <ul style="list-style-type: none"> 1.5.1.1. 802.11 Motion ID 225 1.5.1.2. Moved Ian Reede 1.5.1.3. Second Anil Sanwalka 1.5.1.4. Vote – motion passes 57:0:0 |
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1.6. Old Business**1.6.1. Summary of Key WG events**

- 1.6.1.1. New study groups in 802.15
 - 1.6.1.1.1. Tracking activity for Bluetooth 2.
 - 1.6.1.1.2. Study group for low rate WPAN for sensor applications
- 1.6.1.2. In 802.11
 - 1.6.1.2.1. 5GHz ad hoc group for global harmonization
 - 1.6.1.2.2. Regulatory group – to be presented later

1.6.2. September 2000 Interim Meeting

- 1.6.2.1. Rich Ditch Motorola, Scottsdale AZ, Radisson Resort and Spa. Sept 18-22, 2000. Deadline August 10th. Registration forms in document 802.11 00/223. Fee \$350.
 - 1.6.2.1.1. Attendance Issue – if the attendance goes up to 250 people, the fee goes down to \$275.
 - 1.6.2.1.2. Issue with fee for social. Historically, the sponsor has covered the cost of the social. Has that changed?

1.6.3. Issues with Hosting Interims

- 1.6.3.1. Anticipate meeting sizes growing from 170 to 250, January may be 350, and May meeting may have 400 people.
- 1.6.3.2. Host organizations must be liable for \$100K for room blocks.
- 1.6.3.3. Previous interims have added lunches.
- 1.6.3.4. Discussion
 - 1.6.3.4.1. Why have we created this problem. Why are we turning this into another Plenary. There is little time to interact with other WG's anyway.
 - 1.6.3.4.2. We have having more than WGs come together Regulatory and other groups come as well. It is very convenient.
 - 1.6.3.4.3. Suggestion that IEEE becomes host for Interims as well as Plenary. Suggest bringing this to ExCom.

- 1.6.3.4.4. We cannot change the rules for September. We are committed.
- 1.6.3.5. Straw Polls
 - 1.6.3.5.1. All of those in favor of keeping the lunches and social as part of the September meeting fee: 109:2:33
 - 1.6.3.5.1.1. We will leave September meeting as planned.
 - 1.6.3.5.2. All in favor of maintaining the every two month collaboration joint venues: 178:4:13.
 - 1.6.3.5.2.1. We will continue joint interims
- 1.6.3.6. We will engage IEEE staff for support, but maintain control of the Venue.
- 1.6.3.7. There will be pre-registration, and forms on the web sites.
- 1.6.3.8. Discussion
 - 1.6.3.8.1. As we add support from IEEE, can we extend airline and rental car discounts?
 - 1.6.3.8.2. What about bringing in 802.16 for interims?
 - 1.6.3.8.3. And bring in ETSI BRAN?
 - 1.6.3.8.4. Approved by unanimous voice "Yea" vote
- 1.6.4. January 2001 Interim Meeting
 - 1.6.4.1. We have discusses with ETSI BRAN for a joint meeting in January with 802.16. (January 22)
 - 1.6.4.2. Meeting scheduled for Tel Aviv. Please consider that location in evaluation.
 - 1.6.4.3. Ian indicated that there have been discussions with Intel for hosting the January meeting. 802.11 desires to shelve that proposal.
 - 1.6.4.4. Aside: The Intel offer is flexible as to which week is selected.
 - 1.6.4.5. Straw Poll for selection of week – the week of January 15 is selected.
 - 1.6.4.6. Is there any interest in the week of January 22nd? Some. January 15 remains the most popular choice.
 - 1.6.4.7. Choices are between Orlando and Bay Area.

1.7. Task Group Reports

1.7.1. 802.11 TGb-COR1

- 1.7.1.1. Victoria Poncini
- 1.7.1.2. Finishing up MIB and Annex A.
- 1.7.1.3. Will be published on Web site at end of this session
- 1.7.1.4. Chair to be turned over to Carl Andren

1.7.2. 802.11 TGd

- 1.7.2.1. Bob O'Hara
- 1.7.2.2. TGd resolved comments this week as a result of letter ballot 22.
- 1.7.2.3. Unanimous approval of current draft, 28 editorial comments.
- 1.7.2.4. New Draft is available on server.
- 1.7.2.5. Motion will be presented to send draft to ExCom for forwarding to Sponsor Ballot.

1.7.3. 802.11 TGe

- 1.7.3.1. John Fakatselis
- 1.7.3.2. TGe is putting together requirements.
- 1.7.3.3. Will continue with Evaluation Criteria and Simulation
- 1.7.3.4. We have covered 10% of the submissions. We will not complete the work planned for the week in the one meeting remaining.

1.7.4. 802.11 TGf

- 1.7.4.1. Dave Bagby
- 1.7.4.2. IAPP protocol

- 1.7.4.3. Set the functional requirements
- 1.7.4.4. Dealing with the back side of the AP on the distribution system.
- 1.7.4.5. Three papers were submitted.
- 1.7.4.6. Goals for September – entertain proposals to meet requirements.
- 1.7.5. 802.11 HRbSG
 - 1.7.5.1. Matthew Shoemake
 - 1.7.5.2. (Report in document 225)
 - 1.7.5.3. PAR and 5 Criteria have been submitted to ExCom.
 - 1.7.5.4. Vote for approval will take place in ExCom
 - 1.7.5.5. Drafted a call for intent to propose. (document 198)
 - 1.7.5.6. Document 217r1 - press release
 - 1.7.5.7. 5 submissions were presented.
 - 1.7.5.8. Working on requirements and comparison criteria documents.
 - 1.7.5.9. Expecting semi-weekly meeting before September to complete work on documents.
- 1.7.6. 802.15.2 Co Existence Task Group
 - 1.7.6.1. Steve Shellhammer
 - 1.7.6.2. Report in 802.15 document 173r2.
 - 1.7.6.3. Co Existence model of mutual interference of WLAN and WPAN.
 - 1.7.6.4. Methods of Co Existence.
 - 1.7.6.5. Will be documented in recommended practice document.
 - 1.7.6.6. Discussion of modifying organization of 802.15.2
 - 1.7.6.7. Proposing fully joint task group – three co-chairs from 802.11, 802.15, and 802.16.
 - 1.7.6.8. Proposing that all 802.11 and 802.15 members could vote.
 - 1.7.6.9. Rename group to “Wireless coexistence task group”
 - 1.7.6.10. We will deal with this in closing Plenaries tomorrow.
 - 1.7.6.11. Report will be made available to 802.11 and put on server.
- 1.7.7. 802.15.3 High Rate Task Group
 - 1.7.7.1. John Barr
 - 1.7.7.2. PAR specifies wireless connectivity in personal operating space – 10 meters.
 - 1.7.7.3. Looking for low complexity, low cost, low power.
 - 1.7.7.4. Higher data rate than 802.15.1 (20Mbps)
 - 1.7.7.5. Produce standard by end of 2001 or early 2002.
 - 1.7.7.6. Proposals for 2.4GHz, 5GHz, and ultrawideband.
 - 1.7.7.7. Collaboration on Bluetooth 2.
 - 1.7.7.8. Special adopters agreement to allow an IEEE radio to be entered into Bluetooth Qualification.
- 1.7.8. Review of Joint Regulatory Activities
 - 1.7.8.1. Vic Hayes
 - 1.7.8.2. ET Docket 99-231
 - 1.7.8.3. Report in document 227
 - 1.7.8.4. New filing in Fusion Lighting. Will be put on web site.
 - 1.7.8.5. UK RA on 5GHz. It was not necessary to make a position paper. There is a UK 5GHz advisory group planned for July 27th.
 - 1.7.8.6. Liaison to ETSI BRAN. In the May meeting we received a letter from BRAN regarding allowing 802.11a into the HIPERLAN family member. There are a number of issues to be addressed.
 - 1.7.8.7. Discussion of ITU-R structure.

- 1.7.8.8. ETSI and IEEE are all lobbying for the support of RLAN against 5GHz restrictions being proposed by satellite operators. Requesting support from all IEEE members.
- 1.7.8.9. Position paper to JRG 8a 9b Potential representatives to ITU-R:
 - 1.7.8.9.1. Show of hands for sector members:
 - 1.7.8.9.1.1. USA – 4
 - 1.7.8.9.1.2. Canada – 0
 - 1.7.8.9.1.3. Japan – 0
 - 1.7.8.9.1.4. Europe – 5
 - 1.7.8.9.1.5. Australia – 0
 - 1.7.8.9.1.6. Other – 0
- 1.7.8.10. Convergence of 5GHz LANs. Paper for proposal to make a single global 5GHz standard. Proposal to form a Joint collaboration between ETSI BRAN / IEEE / MMAC. Motion was passed in Ad Hoc Group.
 - 1.7.8.10.1. Vote cannot take place in joint session since document has not been reviewed by 802.15.
- 1.7.8.11. Has ETSI BRAN made a similar movement towards cooperation? ETSI BRAN chair – it is difficult to say. It has not been discussed with HiperLAN community. It will be discussed in the near future, and a roadmap will be considered.
- 1.7.8.12. An agreement has been made to allow 802.11 members to access ETSI BRAN documents on our web site.
- 1.7.8.13. We need more participation from 802.11 before this comes to a vote. Defer until closing plenary.
- 1.7.8.14. Straw Poll: All 802.11 members that support sending a letter to ETSI BRAN and MMAC to come to a collaboration for a single 5GHz standard –
 - 1.7.8.14.1. 802.11 members 82:2:26
 - 1.7.8.14.2. 802.15 members 14:3:19
- 1.7.8.15. Roadmap – 802.11 members participate in October 3-6 ETSI BRAN meeting in Italy. Non ETSI members may be invited by ETSI BRAN Chair.
- 1.7.8.16. Propose that HiperLAN members participate in IEEE 802 November Plenary.
- 1.7.8.17. Potential for joint meeting in January 2001 in Israel.
 - 1.7.8.17.1. Straw poll – Those in favor of an Israel Venue for January 2001 – 23. Those in favor of a West Coast Venue – 93

1.8. New Business

1.8.1. Proposal for 5GHz unified protocol

- 1.8.1.1. Carl Temme, Atheros
- 1.8.1.2. Document 174 (802.11).
- 1.8.1.3. Discussion
 - 1.8.1.3.1. Can this support cell phones? It is a cordless phone, yes they can communicate ad hoc.
 - 1.8.1.3.2. This is being brought to the industry to further the cause, and as a standards based approach. It doesn't replace the need for WPAN.
 - 1.8.1.3.3. How do you maintain backward compatibility without preserving the preamble (from 802.11a and HiperLAN)? The protocol is not entirely worked out. There will be more discussion of technical details tomorrow. The primary MAC still operates according to 802.11a or HiperLAN rules, and set apart a part of time for 5UP operation.

1.8.1.3.4. There is severe near/far problem. It will be addressed in the session tomorrow.

1.8.2. Agenda Adjustment

1.8.2.1. There is no 802.11 plenary session, and TGf has completed its work.

1.8.2.2. Can we assign the slot for TGe?

1.8.2.3. Motion to amend the agenda to use the optional 802.11 plenary slot and TGf slots at 3:00PM for an additional TGe session

1.8.2.3.1. Motion ID 226

1.8.2.3.2. Moved John Fakatselis

1.8.2.3.3. Second Jesse Walker

1.8.2.3.4. Discussion

1.8.2.3.4.1. Change time to 3:45Pm to 5:15PM.

1.8.2.3.5. Vote – motion passes 53:0:5

1.8.2.4. Motion to schedule a regulatory ad hoc session between 8:30AM to 10:00AM.

1.8.2.4.1. Motion ID 227

1.8.2.4.2. Moved Vic Hayes

1.8.2.4.3. Second Kevin Barry

1.8.2.4.4. Vote – motion passes 39:0:6

1.9. Adjourned at 3:30PM

802.11 Closing Plenary, July 13, 2000**1.1. Opening**

- 1.1.1. Called to Order by Stuart Kerry at 13:15
- 1.1.2. Roll Call skipped in the interest of schedule.

1.2. Announcements

- 1.2.1. Mailing list verification.
- 1.2.2. Roughly 130 new participants.

1.3. Agenda Update

- 14 Reports from subgroups
 - 14.1 TGb-cor1 if required
 - 14.2 TGd Regulatory Domain Update
 - 14.3 TGe Enhanced MAC + Ad-Hoc Groups
 - 14.4 TGf IAPP
 - 14.5 HRb 802.11b Data Rates >20 Mbit/s SG
 - 14.6 Marketing Ad-Hoc
 - 14.7 Regulatory Ad-Hoc
 - 14.8 WG Ad-Hoc

Additional Unfinished Business

- 1.3.1.1. IEEE 1394
- 1.3.1.2. 5Ghz Unified Proposal

New Business (per group)**1.4. Reports from Sub Groups**

- 1.4.1. 802.11b-cor1
 - 1.4.1.1. Victoria Poncini
 - 1.4.1.2. document 228
 - 1.4.1.3. will be put on web site for review
- 1.4.2. Response to the ISO Vote
 - 1.4.2.1. Taken up by Carl Andren
- 1.4.3. TGd update
 - 1.4.3.1. Bob O'Hara
 - 1.4.3.2. Document 220
 - 1.4.3.3. 28 editorial comments were reviewed and processed.
 - 1.4.3.4. 25 were accepted and incorporated.
 - 1.4.3.5. New draft of 802.11d supplement.
 - 1.4.3.6. Output documents in Wednesday subdirectory on server.
 - 1.4.3.7. New draft are 802.11d/D1.9
 - 1.4.3.8. 802.11d/D2.0 without change bars will be forwarded for sponsor ballot.

1.4.3.9. Move that 802.11d Draft 2 (file 802.11d-D2.pdf) be forwarded to ExCom to be issued for sponsor ballot.

- 1.4.3.9.1. Motion ID 228
- 1.4.3.9.2. Moved Bob O'Hara
- 1.4.3.9.3. Seconded Chris Zegelin
- 1.4.3.9.4. Discussion

1.4.3.9.4.1. None

1.4.3.9.5. Vote- motion passes 58:0:2

1.4.4. TGe

1.4.4.1. John Fakatselis

1.4.4.2. Generated a formal task group E approved requirements document.

1.4.4.3. Ad Hoc Groups will continue work between meetings.

1.4.4.3.1. Evaluation Criteria Group will establish based on accepted requirements

1.4.4.4. Motion to accept document 137r6 (which will be renamed as document 245 "Adopted Requirements of TGe") as the working group requirements for Task Group E.
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1.4.4.4.1. Motion ID 229

1.4.4.4.2. Moved John Fakatselis

1.4.4.4.3. Second Steve Williams

1.4.4.4.4. Discussion

1.4.4.4.4.1. This document contains requirements that passed formal motions and votes in TGe.

1.4.4.4.4.2. Recommendation that it be released under a new document number.

1.4.4.4.4.3. Do the requirements include DFS? (not really, although the hooks are there). Does this mean 802.11a can conform to CEPT?

1.4.4.4.4.4. It is not a standard the CEPT approves, but a device. We discussed channel sensing, and incorporated it. That was felt to be sufficient.

1.4.4.4.4.5. There is no mention of frequencies in the MAC, only channels.

1.4.4.4.5. Vote on Motion – passes 60:1:7

1.4.4.5. Discussion

1.4.4.5.1. Request for review of motion for last meeting regarding agenda, and agenda for next meeting

1.4.4.5.2. We will continue with the unfinished business of this meeting.

1.4.4.5.3. A missing approved requirement was identified by Amar Ghori.

1.4.4.6. Motion to add to document 245r1 the requirement : 3.5. Support for multiple simultaneous streams with differing priority and class requirements.

1.4.4.6.1. Motion ID 230

1.4.4.6.2. Moved John Fakatselis

1.4.4.6.3. Seconded Peter Ecclesine

1.4.4.7. Vote on motion – passes 47:0:10

1.4.5. TGf

1.4.5.1. Dave Bagby

1.4.5.2. Report in document 215

1.4.5.3. On behalf of 11F, I move that 802.11 accept the actions taken by 802.11f during this session. (May minutes approval and functional requirements adoption)
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1.4.5.3.1. Motion ID 231

1.4.5.3.2. Moved Dave Bagby

1.4.5.3.3. Seconded Gary Spiess

1.4.5.3.4. Vote – motion passes 54:0:3

1.4.5.4. Problems with the MAC SAP

- 1.4.5.4.1. TGf will do the work in this area, and pass it to TGe as input and approval.
- 1.4.5.4.2. Discussion
 - 1.4.5.4.2.1. Can it be done Ad Hoc? If it is done in the TGf meeting times.
 - 1.4.5.4.2.2. Submitted as document to be approved by TGe
 - 1.4.5.4.2.3. No motion needed.
- 1.4.5.5. TGf requests that TGe expedites the security work.
 - 1.4.5.5.1. Try to cover the security enhancements ahead of QoS group.
 - 1.4.5.5.2. Security coordination with IAPP is needed.
- 1.4.6. High Rate B Study Group
 - 1.4.6.1. Matthew Shoemake
 - 1.4.6.2. Report in document 244
 - 1.4.6.3. Document 217r1 on the server – press release.
 - 1.4.6.4. The PAR required no actions, expected to be approved tonight, forming TGg
 - 1.4.6.5. Drafted and approved call for intent.
 - 1.4.6.6. Move to accept document 217r1 and direct the Chair of IEEE 802.11 WG to issue its contents as an IEEE press release, pending approval of the PAR by ExCom.
 - 1.4.6.6.1. Motion ID 232
 - 1.4.6.6.2. Moved Matthew Shoemake
 - 1.4.6.6.3. Second Jan Boer
 - 1.4.6.6.4. Discussion
 - 1.4.6.6.4.1. None
 - 1.4.6.6.5. Vote – motion passes 42:0:12
 - 1.4.6.7. Review of submissions
 - 1.4.6.8. Work in process
 - 1.4.6.8.1. Proposal selection process
 - 1.4.6.9. Move to authorize the HRbSG to hold a series of four conference calls organized and chaired by the HRbSG chairperson starting at 8:00AM pacific time and lasting a maximum of 1.5 hours each on Wednesdays, July 26, August 9, August 23, and September 6, 2000, the purpose of which is to continue work on the Proposal Selection Process, Functional Requirements, and Comparison Criteria, the results of which will be recorded in minutes and posted on the 802.11 web site.
 - 1.4.6.9.1. Motion ID 233
 - 1.4.6.9.2. Moved Matthew Shoemake
 - 1.4.6.9.3. Second Sid Schrum
 - 1.4.6.9.4. Discussion
 - 1.4.6.9.4.1. Move to amend the motion by deleting the last meeting – withdrawn
 - 1.4.6.9.4.2. Vote – Motion passes 51:0:6
 - 1.4.6.10. Discussion
 - 1.4.6.10.1. Does the group propose to collaborate with the FCC regarding acceptable modulation schemes.
 - 1.4.6.10.2. Yes, that is the PAR.
- 1.4.7. Marketing Ad Hoc Group
 - 1.4.7.1. Al Petrick
 - 1.4.7.2. Report in Document in document 181
 - 1.4.7.3. Conferences

1.4.7.4. Liaisons

- 1.4.7.4.1. Jim Zyren, assigned as Marketing Liaison to WECA.
- 1.4.7.4.2. Bruce Kreamer is the Liaison to the OFDM forum.

1.4.8. Regulatory Group

1.4.8.1. Vic Hayes

1.4.8.2. Report in document 242r1

1.4.8.3. Move to approve document 00/216d4 for submission to the FCC as an 802.11 Position Statement, anticipating addition of 802.15 as a joint submitter.

- 1.4.8.3.1. Motion ID 234
- 1.4.8.3.2. Moved Vic Hayes
- 1.4.8.3.3. Seconded Peter Ecclesine
- 1.4.8.3.4. Vote – Motion passes 47:1:7

1.4.8.4. Liaison statement to ETSI BRAN, document 241

1.4.8.5. Move to approve the submission of document 241 to the chair of ETSI BRAN.

- 1.4.8.5.1. Motion ID 235
- 1.4.8.5.2. Moved Vic Hayes
- 1.4.8.5.3. Seconded Dennis Kuahara
- 1.4.8.5.4. Vote – motion passes 45:0:4

1.4.8.6. Liaison letter to MMAC

- 1.4.8.6.1. Was not completed, will be taken up in September.

1.4.8.7. RLAN parameters for sharing with satellites.

1.4.8.8. Review of ITU-R structure.

1.4.8.9. ITU lobbying needed – document 232.

1.4.9. Working Group Ad Hoc

1.4.9.1. Revised rules for the 802.11 working group

1.4.9.2. In cooperation with 802.15

1.4.9.3. Document will be on the reflector

1.4.9.4. Will be voted on at the September meeting

1.5. Unfinished Business

1.5.1. Output documents

1.5.1.1. From each sub group.

1.5.1.2. Short Form Reports needed from group chairs.

1.5.2. Joint Co Existence Group

1.5.2.1. We are in discussion with 802.15 to form an co-chaired coexistence group for 2.4GHz and 5GHz.

1.5.3. 802.11a publication error

1.5.3.1. 802.11a-1999 corrigenda

1.5.3.2. Errors in annex G, G2, G3, and 24 - numerical errors.

1.5.3.3. Corrections are in document 224

1.5.3.4. Corrections will be posted on the IEEE web site.

1.5.4. IEEE 1394 issue

1.5.4.1. ETSI BRAN work in conjunction with IEEE 1394.

1.5.4.2. Do we need an Liaison?

1.5.5. ETSI BRAN

1.5.5.1. 802.11 Website will contain ETSI BRAN documentation.

1.5.6. DSRC relationship

1.5.7. IEEE ISTO statement

1.5.7.1. Issue with statement being issued by ISTO issuing statement of support of a competing standard, in conflict with work of project 802.

1.5.7.2. Document 238 and Document 239, Document 240

1.5.7.3. Move for 802.11 to ask ExCom to perform an audit of the use of IEEE's name by IEEE-ISTO's press release policy.

1.5.7.3.1. Motion ID 236
 1.5.7.3.2. Moved Peter Ecclesine
 1.5.7.3.3. Second Al Petrick
 1.5.7.3.4. Discussion

1.5.7.3.4.1. Who will perform the audit? It means enforce and police. There will be a policy to control press releases.
 1.5.7.3.4.2. What is the value of a roll call? It is the best way to convey this message in this case.

1.5.7.3.5. Roll Call Vote: 55 yes (chair abstain), 0 no, 0 abstain.

1.5.8. Empowerment of the meeting in Scottsdale

1.5.8.1. Move to empower the working group at the Scottsdale 802.11 meeting, September 18-22, 2000 to continue work as required in Plenary sessions, as published in the working group minutes of July 2000, document 00/185

1.5.8.1.1. Motion ID 237
 1.5.8.1.2. Moved Harry Worstell
 1.5.8.1.3. Seconded Anil Sanwalka
 1.5.8.1.4. Vote 32:0:2

1.5.9. Atheros 5GHz proposal deferred to top of agenda at September meeting

1.6. **Future Meetings**

1.6.1. Will be posted to the web site

1.6.2. Change of March 2002 plenary to St Louis.

1.6.3. Other Interim Meetings –

1.6.3.1. On Web Site. Scottsdale - Document 221

1.6.4. Network Setup –

1.6.4.1. Ravi, Don Berry

1.6.4.2. Return any RoamAbout cards.

1.7. **Objectives for next meeting**

1.7.1. TGd

1.7.1.1. Process sponsor ballot if needed

1.7.2. TGe

1.7.2.1. Continue work on Evaluation Criteria

1.7.2.2. Continue work on Simulation Environment

1.7.2.3. Presentation of papers and proposals

1.7.3. TGf

1.7.3.1. Entertain proposals

1.7.4. TGg

1.7.4.1. Empower a Chair

1.7.4.2. Can we empower a chair without a quorum?

1.7.4.3. Bob O'Hara nominates Matthew Shoemake as TGg chair.

1.7.4.4. The Chair of the 802.11 WG unanimously accepts and promotes Matthew Shoemake to the chair of TGg

1.7.4.5. Plans for September: Requirements document, evaluation criteria, and call for proposals.

1.7.4.6. Update on web site for Friday

1.7.5. Marketing

1.7.5.1. Working on 802.15 liaison, update for web site

1.7.6. Regulatory

1.7.6.1. Same as previously discussed.

1.7.7. Health and Safety

1.7.7.1. Planning a speaker to present on the issue.

1.8. **Agenda for September**

1.8.1. Will be set off line after the meeting.

1.9. **New Business**

1.9.1. Discussion

1.9.1.1. There is a concern on how this group responded to FCC on the issue of Wideband Frequency Hopping. Feels that there was an advantage taken of certain groups.

1.9.1.2. Disagreement with this position. It is in the best interest of this group to protect this standard and the work we have done against regulatory proposals that could be harmful.

1.9.1.3. Disagreement with the concern. We have been very careful, and our efforts align with IEEE rules for position statements.

1.9.2. 5GHz protocol was not presented due to lack of time

1.9.2.1. Document 175 on the server

1.10. **Adjourn**

Attendance list for the meeting held at **Hyatt Regency, La Jolla, CA**

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Baker (Scott)	nonvoter	10	+1 303 -413 9732	Baker Scott	bscott6@uswest.net
Mr. Colum (Caldwell)	nonvoter	10	+353 1 677 9555	Supergold Communication, Ltd	colum.caldwell@supergold.com
Mr. Grant (Hulse)	nonvoter	10	+1 858 385 1808 Ext 101	American Microsystems, Inc.	ghulse@poci.amis.com
Mr. Jeff Abramowitz (Jeff)	aspirant	75	+1 650 324 1105	No Wires Needed B.V.	jabramowitz@nwn.com
Dr. L Enrique Aguado (Enrique)	aspirant	100	+44 113 233 2004	Supergold Communication, Ltd	enrique@supergold.com
Mr. Masaaki Akahane (Masa)	nonvoter	100	+81 3 5795 5420	Sony Corporation	akahane@wcs.sony.co.jp
Dr. Reza Alavi ()	aspirant	100	+1 782 868 7122	Analog Devices	reza.alavi@analog.com
Mr. Avner Aloush (Avner)	aspirant	0	+972 3 6456217 / 262	BreezeCom	avnera@breezecom.co.il
Mr. Keith Amann (Keith)	voter	100	+1 303 440 5330	Spectralink	kamann@spectralink.com
Mr. Khaled Amer (Khaled)	nonvoter	65	+1 949 552 1114	AmerNet	khaledamer@usa.net
Mr. John E. Amschler ()	nonvoter	45	+1 858 385 4540	Intel Corporation	john.e.amschler@intel.com
Mr. Keith B. Amundsen (Keith)	voter	15	+1 781 979 4094	C-Port Corp.	kamundsen@cportcorp.com
Mr. Tom Anderson ()	nonvoter	75	+1 520 628 9000 Ext 215	Gain Technology Corporation	tanderson@gain.com
Mr. Merwyn Andrade ()	nonvoter	100	+1 408 526 4628	Cisco Systems Inc.	mandrade@cisco.com
Mr. Carl F. Andren (Carl)	voter	100	+1 321 724 7535	Intersil Corporation	candren@intersil.com
Dr. Butch Anton	aspirant	0	+1 408 551 0909	hereUare Communciations, Inc.	butch@hereuare.com
Dr. Shahnaz Azizi ()	nonvoter	100	+1 858 385 4318	Intel Corporation	shahnaz.azizi@intel.com
Mr. David Bagby	voter	100	+1 408 326 3762	3Com Corporation	david_bagby@3com.com
Mr. Jay Bain (Jay)	voter	100	+1 256 922 9229	Time Domain	jay.bain@tdsi.com
Mr. Albert Banchi ()	nonvoter	100		Temporary Dummy	Albert.banchi@nec.ecrle.de
Mr. Rob Baranowski ()	nonvoter	30	+1 925 460 1900	ParkerVision, Inc.	rob@fastwave.net
Mr. David Barr ()	nonvoter	85	+1 408 490 8293	C-Cube	
Mr. Kevin M. Barry (Kevin)	voter	90	+1 516 244 4345	SITA	kevin.barry@sita.int
Mr. Bob Beach (Bob)	aspirant	0	+1 408 528 2602	Symbol Technologies Inc.	bobb@sj.symbol.com
Mr. Don Berry (Don)	nearly voter	100	+1 425 936 8418	Microsoft	donbe@microsoft.com
Mr. Thomas R. Bilotta ()	nonvoter	30	+1 760 745 9212	Rainbow Network Systems	tbilotta@pacbell.com
Mr. Jan Boer (Jan)	voter	95	+31 30 609 7483	Lucent Technologies Nederland	janboer@lucent.com
Mr. Jerrold L. Bonn ()	nonvoter	100	+1 508 490 1771	Raytheon Company	jerrold_bonn@res.raytheon.com
Mr. Ronald Brockmann (Ronald)	voter	100	+31 30 229 6081	No Wires Needed B.V.	ronald.brockmann@nwn.nl
Mr. Arthur Burkhardt ()	nonvoter	100	+1858 450 1220 ext. 3010	Solectek Corporation	aburkhardt@solectek.com
Mr. Colum Caldwell (Colum)	voter	100	+353 1 677 9555	Supergold Communication, Ltd	colum.caldwell@supergold.com
Mr. Scott J. Carter ()	nonvoter	15	+1 714 546 0147	Vitalcom	scott_carter@vitalcom.com

Wednesday, July 19, 2000

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<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Broady B. Cash (Broady)	aspirant	75	+1 410 266 4413	Arinc	bcash@arinc.com
Mr. Naftali Chayat (Naftali)	voter	10	+972 3 645 6262	BreezeCom	naftalic@breezecom.co.il
Dr. Kwang-Cheng Chen ()	nonvoter	30	+886 2 2363 5251 Ext 246	National Taiwan University	chenkc@cc.ee.ntu.edu.tw
Mr. Brian Cheng ()	nonvoter	100	+ 1 613 592 2122	Mitel Corporation	brian_cheng@mitel.com
Dr. Greg Chesson ()	nonvoter	100	+1 650 494 7878 Ext 165	Atheros Communications, Inc.	greg@atheros.com
Dr. Sunghyun Choi (Sunghyun)	voter	100	+1 914 945 6506	Philips Research	sunghyun.choi@philips.com
Mr. Patrick Coakley ()	nonvoter	15	+1 949 366 9800	Code Space Inc.	pcoakley@codespace.com
Dr. John T. Coffey ()	nonvoter	100	+1 707 284 2224	Alantro Communications	coffey@alantro.com
Mr. Craig Conkling (Craig)	aspirant	65	+1 408 991 2749	Philips Semiconductor	craig.conkling@philips.com
Mr. Dennis Connors (Dennis)	aspirant	85	+1 858 259 9240	Magis Networks	dconnors@magisnetworks.com
Mr. Wm. Caldwell Crosswy (Caldwell)	nearly voter	100	+1 281 514 2774	Compaq Computer Corporation	caldwell.crosswy@compaq.com
Mr. Phillip Davies (Phil)	nonvoter	75	520 628 9000 ext 111	Gain Technology Corporation	pdavies@gain.com
Mr. Barry Davis ()	nonvoter	100	+1 503 264 7287	Intel	barry.r.davis@intel.com
Mr. Wim Diepstraten (Wim)	voter	100	+31 30 609 7482	Lucent Technologies Nederland	wdiepstraten@lucent.com
Mr. Neal Domen ()	nonvoter	100	+1 408 721 2485	National Semiconductor Corporation	neal.domen@nsc.com
Mr. Dustin Doo ()	nonvoter	15	+1 408 428 1188 Ext 101	OL'E Communications, Inc	dtu@olecomm.com
Mr. Dennis Eaton ()	nonvoter	100	+1 321 729 4178	Intersil Corporation	deaton@intersil.com
Mr. Peter Ecclesine (Peter)	voter	100	+1 408 527 0815	Cisco Systems Inc.	petere@aimnet.com
Mr. Richard Eckard (Dick)	voter	100	+1 781 466 2780	Verizon Communications	dick.eckard@verison.com
Mr. Greg Ennis (Greg)	voter	75	+1 408 358 5544		gennis@mindspring.com
Mr. John Fakatselis (John)	voter	100	+1 407 729 4733	Intersil Corporation	jfakat01@intersil.com
Mr. Michael Fischer (Michael)	voter	100	+1 210 614 4096	Choice Microsystems	mfischer@child.com
Mr. Jason Flaks	aspirant	100	+1 415 558 0373	Dolby Laboratories Inc	jsf@dolby.com
Mr. Kleitz Francois ()	nonvoter	100		Alcatel	francois.kleitz@alcatel.fr
Mr. Kenji Fujisawa ()	nonvoter	100	+81 3 5795 8507	Sony Corporation	fujisawa@sm.sony.co.jp
Mr. Marcus Gahler (Marcus)	aspirant	100	+1 425 825 1770	NextComm, Inc.	mgahler@nextcomminc.com
Dr. Zvi Ganz (Zvi)	aspirant	100	+1 978 250 0770	EnrichNet, Inc	z ganz@enrichnet.com
Mr. Atul Garg (Atul)	aspirant	100	+1 408 991 5755	Philips Semiconductors	atul.garg@philips.com
Mr. Amar Ghorri (Amar)	voter	100	+1 916 939 9400	Sharewave Inc.	amar.ghori@sharewave.co
Mr. Tim Godfrey (Tim)	voter	100	+1 913 706 3777	Intersil	tgodfrey@choicemicro.com
Mr. Andrew J. Gowans ()	nonvoter	100	+44 20 7211 0309	Wyndham House	gowansa@ra.gtnet.gov.uk
Dr. Steven D. Gray (Steven)	voter	100	+1 972 894 4422	Nokia Research Center	steven.gray@nokia.com
Mr. Evan Green (Evan)	voter	100	+1 503 264 8456	Intel Corporation	evan.r.green@intel.com
Dr. Rajugopal Gubbi (Rajugopal)	voter	100	+1 916 939 9400 X3119	Sharewave Inc.	raju.gubbi@sharewave.com

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. David Halasz (David)	voter	100	+1 330 664 7389	Cisco Systems, Inc	dhala@cisco.com
Dr. Steve D. Halford ()	nonvoter	100	+1 321 729 5130	Intersil Corporation	shalford@intersil.com
Dr. Christopher J. Hansen (Chris)	voter	100	+1 408 501 8078	Broadcom Corporation	chansen@broadcom.com
Mr. Yasuo Harada (Yasuo)	aspirant	100	+ 81 6 6900 9177	Matsushita Electric Industrial Co. Ltd.	yasuo@isl.mei.co.jp
Mr. Mohammed Hasan (Mohammed)	nonvoter	10	+1 972 684 1732	Nortel	hasanm@nortel.com
Mr. Victor Hayes (Vic)	voter	100	+31 30 609 7528	Lucent Technologies Nederland	vichayes@lucent.com
Dr. Chris Heegard (Chris)	voter	100	+1 707 521 3062	Alantrio Communications	heegard@alantrio.com
Mr. Juha Heiskala (Juha)	voter	100	+1 972 894 5516	Nokia Research Center	juha.heiskala@nokia.com
Mr. Christopher Hinsz	nonvoter	100	+1 408 528 2452	Symbol Technologies Inc.	chinsz@sj.symbol.com
Mr. Jin-Meng Ho (Jin-Meng)	voter	100	+1 973 236 6791	AT&T Labs	jinmengho@att.com
Mr. Maarten Hoebe (Maarten)	voter	100	+31 30 229 6083	No Wires Needed B.V.	maarten.hoebe@nwn.nl
Mr. Raymond Hou ()	nonvoter	85	+1 510 656 1680	Amplifynet	rhou@amplifynet.com
Mr. Frank P Howley, Jr (Frank)	voter	100	+1 650 494 7878	Atheros Communications, Inc.	fhowley@tspan.com
Mr. Robert Y. Huang (Bob)	voter	100	+1 201 392 4344	Panasonic	huangb@panasonic.com
Mr. Masataka Iizuka (Masataka)	voter	100	+81 468 59 8692	NTT Access Network Service Systems Labs.	iizuka@ansl.ntt.co.jp
Mr. Masayuki Ikeda (Masayuki)	voter	100	+81 266 52 3131	Seiko Epson Corp.	ikeda.masayuki@exc.epson.co.jp
Mr. Jed Johnson (Jed)	aspirant	90	+1 508 261 5380	Motorola	jed.johnson@motorola.com
Dr. Srinivas Kandala (Sri)	voter	10	+1 360 817 7512	Sharp Laboratories of America,	sri@sharplabs.com
Mr. Shantanu Kangude (Shantanu)	aspirant	100	+1 503 264-8465	Intel Corporation	shantanu.kangude@intel.co
Mr. Kevin Karcz	voter	100	+1 603 862 1008	University of New Hampshire	kjk@unh.edu
Dr. Jaime E. Kardontchik ()	nonvoter	30	+1 408 433 5200 ext. 232	Micro Linear	kardontchik.jaie@ulinear.co
Mr. Allen Kasey ()	nonvoter	90	+1 707 566 8300	Broadlink	akasey@broadlink.com
Mr. Mika Kasslin (Mika)	voter	85	+358 40 525 8932	Nokia Research Center	mika.kasslin@nokia.com
Mr. Toshi H. Kawai ()	nonvoter	85	+81 3 5795 8503	Sony Corporation	kawai@sm.sony.co.jp
Mr. David Kelley ()	nonvoter	75	+1 626 915 4466	SubCarrier Systems Corporation	davidkelley@sautcity.com
Mr. Richard Kennedy ()	nonvoter	100	+1 281 514 8695	Compaq Computer Corporation	richard.kennedy@compaq.com
Mr. Stuart J. Kerry (Stuart)	voter	100	+1 408 991 4854	Philips Semiconductors, Inc.	stuart.kerry@philips.com
Dr. Jamshid Khun-Jush (Jamshid)	voter	100	+49 911 5217 260	Ericsson Eurolab Deutschland GmbH	jamshid.khun-jush@eed.ericsson.se
Mr. Ryoji Kido (Ryoji)	voter	100	+81 92 852 1873	Kyushu Matshushita Electric Co., Ltd.	kido@tr.kme.mei.co.jp
Dr. Young Kim ()	nonvoter	100	+1 323 293 3001 Ext 509	LinCom Wireless	kimy@lincom.com
Mr. Ken Kimura (Ken)	voter	100	+1 201 271 3039	Panasonic	kenkimur@bellatlantic.net
Dr. John M. Kowalski (John)	voter	100	+1 360 817 7520	Sharp Laboratories of America	kowalskj@sharplabs.com
Mr. Bruce P. Kraemer (Bruce)	voter	100	+1 407 729 5683	Intersil Corporation	bkraemer@intersil.com

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Denis Kuwahara (Denis)	voter	100	+1 425 957 5366	Boeing	denis.kuwahara@pss.boeing.com
Mr. David S. Landeta (David)	aspirant	85	+1 407 729 5540	Intersil Corporation	dlandeta@intersil.com
Mr. Stanley Ling (Stan)	aspirant	100	+1 916 855 5177 x2398	Intel	stanl@level1.com
Mr. James Little ()	nonvoter	15	+1 916 855 5177 ext 4745	Level One Communications Inc.	jlittle@level1.com
Mr. Jerry Loraine	voter	100	+44 1223 837666	Micro Linear Corp.	loraine.jerry@microlinear.co
Mr. Hermann Loske (Hermann)	nonvoter	30	+49 721 595 4915	Siemens AG	hermann.loske@khe.siemens.de
Mr. Douglas Makishima (Doug)	nonvoter	30	+1 925 460 1929	ParkerVision, Inc.	doug@d2d.com
Mr. Brian Mathews ()	nonvoter	85	+1 321 795 8558	AbsoluteValue Systems	brian@linux-wlan.com
Mr. Bill McFarland (Bill)	voter	95	+1 650 494 7871X102	Atheros Communications	billm@atheros.com
Mr. Michael D. McInnis (Mike)	voter	100	+1 425 865 2840	The Boeing Company	michael.d.mcinnis@boeing.com
Mr. Scott Mcleod	nonvoter	75	+1 520 628 9000 Ext 204	Gain Technology Corporation	smcleod@gain.com
Mr. Justin P. McNew ()	nonvoter	90	+1 818 501 1903	TechnoCom Corporation	jmcnew@technocom-wireless.com
Mr. Arthur Miller ()	nonvoter	15	+1 512 306 4058	Zilog	armiller@zillog.com
Mr. Robert Miller (Bob)	nonvoter	85	+1 973 236 6920	AT&T Labs	rrm@att.com
Mr. Reiner Mim (Reiner)	voter	100	+1 408 731 2768	Proxim Inc.	rmim@proxim.com
Mr. Peter Murray	voter	100	+1 908 232 9054	No Wires Needed B.V.	pmurray99@home.com
Mr. Marco Naeve ()	nonvoter	100	+1 414 449 7270	Eaton Corporation	marconaeve@eaton.com
Mr. Kazuaki Naito (Kazuaki)	aspirant	100	+81 42 581 5996	Seiko Epson Corporation	naito.kazuaki@exc.epson.com.jp
Mr. Ravi P. Nalamati (Ravi)	voter	100	+1 978 684 1222	Enterasys Inc	nalamati@cabletron.com
Dr. Ravi Narasimhan ()	nonvoter	100	+1 408 522 2315	Marvell Semiconductor, Inc.	ravin@marvell.com
Mr. Jim Nelson ()	nonvoter	10	+1 323 293 3001	LinCom Wireless	nelsonj@lincom.com
Mr. Neal Newhouse ()	nonvoter	65		Rockwell Collins	
Mr. Erwin R. Noble (Erwin)	voter	30	+1 281 719 1955	Telxon Corporation	enobl@telxon.com
Mr. Bob O'Hara (Bob)	voter	100	+1 408 986 9596	Informed Technology Inc.	bob@informed-technology.com
Mr. John O'Sullivan ()	nonvoter	45	+61 2 8874 5425	Radiata	john.osullivan@radiata.com
Mr. Subra Parameswaran (Subra)	aspirant	100	+1 408 721 8216	National Semiconductor Corporation	tps@lan.nsc.com
Dr. Hyuncheol Park ()	nonvoter	45	+ 82 331 200 3895	Samsung Electronics	hcpark@mrrnd.sec.samsung.co.kr
Mr. Gregory Parks (Greg)	voter	100	+1 916 939 9400 X3211	Sharewave Inc.	greg.parks@sharewave.co
Mr. Al Petrick (Al)	voter	100	+1 407 384 6149	ParkerVision, Inc.	apetrick@parkervision.com
Ms. Victoria M. Poncini (Victoria)	voter	85	+1 425 882-8080	Microsoft Corporation	vponcini@microsoft.com
Ir. Anand R. Prasad (Anand)	voter	100	+31 30 609 7564	Lucent Technologies Nederland	aprasad1@lucent.com
Mr. Ron Provencio (Ron)	aspirant	100	+1 707 284 2232	Alantro Communications	ronp@alantro.com
Mr. Alex Raji ()	nonvoter	100	+1 404 898 1765	Lucent Technologies	araji@lucent.com
Mr. Punyabrata Ray ()	nonvoter	25			pray@sj.symbol.com
Dr. Javad Razavilar ()	nonvoter	90	+1 858 674 8505	3COM	javad_razavilar@3com.com

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<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Dr. David Reed (E.)	nonvoter	30	+1 303 464 6637	Cirrus Logic, Inc	daver@colorado.cirrus.com
Mr. Ivan Reede (Ivan)	voter	60	+1 514 620 8522	AmeriSys Inc.	i_reede@amerisys.com
Dr. Stanley A. Reible (Stan)	voter	42	+1 781 224 4000	Micrilor Inc.	reible@compuserve.com
Mr. Danny Rettig ()	nonvoter	100	+972 4 865 5579	Intel	dany.rettig@intel.com
Mr. David Richkas ()	nonvoter	100		Intel	david.a.richkas@intel.com
Mr. Maximilian Riegel (Max)	nonvoter	100	+49 89 722 49557	Siemens	maximilian.riegel@icn.siemens.de
Mr. Carlos A. Rios (Carlos)	voter	85	+1 408 326 2844	LinCom	riosc@lincom.com
Mr. William Roberts (William)	aspirant	100	+1 208 234 9898 x 3103	American Microsystems, Inc.	wroberts@poci.amis.com
Mr. John Rosenlof ()	nonvoter	15	+1 707 521 3060	Alantro Communications	rosenlof@alantro.com
Mr. Rob Roy ()	aspirant	10	+1 503 681 8600 Ext 225	Mobilian Corporation	rob.roy@mobilian.com
Dr. Clemens C.W. Ruppel (Clemens)	aspirant	100	+49 89 636 5 33 25	Siemens AG	c.c.ruppel@ieee.org
Mr. Carl Ruzyccki ()	nonvoter	90	+1 978 250 0770	EnrichNet, Inc	cruzycki@enrichnet.com
Mr. Gunnar Rydnell (Gunnar)	voter	100	+46 31 344 63 20	Ericsson Mobile Data Design AB	gunnar.rydnell@erv.ericsson.se
Mr. Henry Saam	aspirant	75	+1 858 259 9240	Magis Networks	hsaam@majisnetworks.com
Mr. PJ Sallaway ()	nonvoter	30	+1 858 535 8780	National Semiconductor Corporation	pj.sallaway@nsc.com
Mr. P. Taylor Salman ()	nonvoter	15	+1 202 364 4700	Opnet Technologies, Inc.	tsalman@opnet.com
Mr. Anil K. Sanwalka (Anil)	voter	100	+1 416 754 8007	Neesus Datacom, Inc	anil@neesus.com
Mr. Durga Satapathy	aspirant	0	+1 913 534 6338	Sprint	durga.satapathy@mail.sprint.com
Mr. Sid Schrum (Sid)	voter	100	+1 919 319 1890 x	Alantro Communications	sschrum@alantro.com
Mr. Baker Scott ()	nonvoter	65	+1 303 413 9732		bscott6@uswest.net
Mr. Rick Shaw ()	nonvoter	100	+1 801 563 5900	Micro Linear	rick_shaw@networld.com
Dr. Stephen J. Shellhammer (Steve)	aspirant	10	+1 516 738 4302	Symbol Technologies Inc.	shell@symbol.com
Dr. Chaim Shenhav ()	nonvoter	100	+1 408 733 4238 ext 115	nBand Communications	cshenhav@nband.com
Mr. Matthew Sherman (Matthew)	aspirant	100	+1 973 236 6925	AT&T Labs	mjsherman@att.com
Dr. Matthew B. Shoemake (Matthew)	voter	100	+1 707 521 3067	Alantro Communications	shoemake@alantro.com
Mr. Alan Sicher ()	nonvoter	45	+1 512 723 5483	Dell Computer Corporation	alan_sicher@dell.com
Mr. Thomas Siep (Tom)	voter	100	+1 972 480 6786	Texas Instruments	siep@ti.com
Mr. David Skellern (David)	voter	100	+61 2 9372 4620	Radiata Communications Pty Ltd	daves@radiata.com
Mr. Donald I. Sloan (Don)	voter	85	+1 330 664 7917	Aironet Wireless Communications Inc.	dons@cisco.com
Mr. Gary Spiess (Gary)	voter	100	+1 319 369 3580	Intermec Technologies Corp. (Norand)	gary.spiess@intermec.com
Ms. Dorothy V. Stanley ()	nonvoter	90	+1 630 979 1572	Lucent Technologies, Inc.	dstanley@lucent.com
David Tahmassebi ()	nonvoter	85	+1 408 392 7043	NeoSilicon	david.tahmassebi@neo-silicon.com
Mr. Hitoshi Takai (Hitoshi)	nonvoter	10	+81 6 6900 9177	Matsushita Electric Industrial Co. Ltd.	takai@isl.mei.co.jp
Dr. Narciso L. Tan (Narciso)	nonvoter	10	+1 914 945 6130	Philips Research	nlt@philabs.research.philips.com

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<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Teik-Kheong Tan (TK)	aspirant	100	+1 408 326 6524	3Com Corporation	teik_kheong_tan@3com.com
Mr. Carl Temme (Carl)	voter	100	+1 650 494 7878	Atheros Communications	ctemme@tspan.com
Mr. Harold Teunissen ()	nonvoter	100	+31 35 687 5711	Lucent Technologies	hteunissen@lucent.com
Mr. Mihran Touriguian ()	nonvoter	15		Systematic AG	tourigui@hotmail.com
Dr. Chih C. Tsien (Chih)	voter	100	+1 858 385 4317	Intel	chih.c.tsien@intel.com
Mr. Tom Tsoulogiannis (Tom)	voter	100	+1 416 754 8007	Neesus Datacom Inc.	tomt@neesus.com
Dr. Dmitri Varsanofiev	nonvoter	100	+1 408 392 7063	NeoSilicon	dmitri@varsanofiev.com
Mr. Sarosh Vesuna (Sarosh)	nonvoter	30	+1 408 528 2657	Symbol Technologies Inc.	saroshv@sj.symbol.com
Mr. Tim Wakeley (Tim)	nearly voter	100	+1 916 785 1619	Hewlett Packard	tim_wakeley@hp.com
Dr. Jesse R. Walker (Jesse)	voter	100	+1 503 712 1849	Intel Corporation	jesse.walker@intel.com
Mr. Shinichiro Wantanabe ()	nonvoter	10	+81 42 581 5996	Seiko Epson Corporation	watanabe.shinichiro@exc.epson.co.jp
Mr. Yoshinori Wantanabe (Yoshinori)	aspirant	100	+81 44 932 5066	Matsushita Research Institute Toyko, Inc.	watanabe.shinichiro
Mr. Mark Webster (Mark)	aspirant	100	+1 321 724 7537	Intersil Corporation	mark.webster@intersil.com
Mr. Mike Wehrs ()	nonvoter	15	+1 425 709 0772	Ignition	mwehrs@ignitioncorp.com
Mr. Menzo Wentink (Menzo)	voter	100	+31 30 225 97 52	No Wires Needed	menzo@nwn.com
Mr. Steven D. Williams (Steven)	voter	100	+1 503 264 2043	Intel Corporation	steven.d.williams@intel.com
Mr. Alan Winskowski (Alan)	voter	100	+972 3 6456249	BreezeCom	alanw@breezecom.co.il
Mr. Harry Worstell (Harry)	voter	100	+1 973 236 6915	AT&T Labs	hworstell@att.com
Mr. Allen Wu (Allen)	aspirant	100	+1 858 404 2550	Motorola	awu@gi.com
Mr. Hidehiro Yamashita (Hiro)	voter	100	+1 408 861 3921	Panasonic Technologies, Inc.	hyama@research.panasonic.com
Mr. Paul Yang ()	nonvoter	100	+1 408 245 6888 Ext 239	OTC Telecom	pyang@ezylink.com
Dr. Vladimir Yanover ()	nonvoter	100	+972 3 645 7834	BreezeCom	viadimiry@breezecom.co.il
Dr. Wen-Ping Ying (Wen-Ping)	voter	90	+1 425 825 1770 x	NextComm, Inc.	wying@nextcomminc.com
Mr. Albert Young (Albert)	voter	100	+1 408 326 6435	3Com Corporation	albert_young@3com.com
Mr. Kit Young ()	nonvoter	100	+1 281 514 4752	Compaq Computer Corporation	kit.young@compaq.com
Mr. Chris Zegelin	voter	100	+1 408 528 2667	Symbol Technologies Inc.	chrisz@sj.symbol.com
Mr. Yoram Zinovich ()	nonvoter	100	+972 4 865 5318	Intel Israel (74) Ltd.	yoram.zinovich@intel.com
Mr. Johnny Zweig (Johnny)	aspirant	100	+1 408 495 7114	Nortel Networks Inc.	JZweig@NortelNetworks.co
Mr. Jim Zyren (Jim)	voter	85	+1 407 729 4177	Intersil Corporation	jzyren@intersil.com

**IEEE P802.11
Wireless LANs
Minutes of TGd**

Date:

July 12, 2000

Author:

Bob O'Hara
Informed Technology, Inc.
Phone: +1 408 986 9596
Fax: +1 408 727 2654
e-Mail: bob@informed-technology.com

Minutes of TGd at the 802.11 Meetings in San Diego, CA

Session on July 12th, 2000

Call to order 08:40

Agenda was approved without dissent.

Proposed Action for this meeting

Work through comments and address them in the order they appear.

Resolution of comments on letter ballot 22 were taken individually. All comments were addressed. 25 comments were accepted, 2 withdrawn, 1 resolved without change to the draft. Draft 1.9 was updated with the resolutions to the comments, resulting in Draft 1.99 (with change bars) and Draft 2 (without change bars).

Motion: to approve the comment resolutions in document 00/221.

Moved – Chris Zegelin

Second –

Vote passes 11/0/0

The business of the task group being concluded, the meeting adjourned at 09:55.

**IEEE P802.11
Wireless LANs**

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

Date: July 10, 2000
Author: Tim Godfrey
Intersil
Phone: 913-706-3777
Fax: 913-664-2545
e-Mail: tgodfrey@intersil.com

**Minutes of the IEEE P802.11 Task Group E
MAC Enhancements**

July 10 - 14, 2000

Hyatt Regency La Jolla, La Jolla, CA

1.1. Monday Afternoon

Appointment of Secretary

Tim Godfrey

Session called to order at 3:45PM by chair, John Faketselis.

Objectives for session

*Complete Requirements
Complete Evaluation Criteria
Complete Simulations*

Proposed Agenda

*Requirements papers
Requirements document draft approval
Evaluation Criteria papers
Evaluation criteria draft approval
Simulation papers
Simulation set up document approval
MAC media awareness papers
Other Technical Documents*

Discussion on Agenda

*First order of business should be functional requirements.
What does approval of draft requirements mean? Are they final? We believe them to be final, but the group can move to change them in the future.*

No

Adoption of Agenda

Agenda approved without objection.

Policies Overview

Show of hands – first time participants: approximately 35.

Voting rights for Task Groups

Debates, rights of members

Key Motions (Roberts Rules)

Concerns with process – by following these rules and process, we are safeguarded against any group forcing a predetermined solution onto this group.

On the final submission of draft, there must be a consensus of at least 90% in order to satisfy the executive committee.

Schedule Overview

We are planning to have a draft by November 2000.

We may or may not be able to meet this, but we will accelerate our progress as much as possible.

Overview of Teleconferences

Report from Requirements group – Tim Godfrey

Output document is 137r5

Report from Metrics and Evaluation Criteria Group – Greg Parks

Output document is 143r3, r4 document will be on the server.

The document will specify minimum functional requirements for proposals.

Report from Simulation Group – Evan Green

Preparing a report to be presented to group this week.

The team that is put together is doing actual simulation of the 802.11 enhancements.

Report from MAC media awareness

DFS and TPC - passing to MAC knowledge of what his happening in the media. Mandatory in Europe.

Harold will have a submission on this topic.

Call for Papers

Requirements Related

Document 137r5, Tim Godfrey

Document 176, Bob O'Hara

Document 184, Victoria Poncini

Evaluation Criteria Related

Document 196, Greg Parks

Simulation Related

Document 201, Evan Green

MAC Media Awareness Related

Document 154, Harold T

Document 195, Sunghyun Choi

Document 190, Mika Kasslin

Document 191, Mika Kasslin

Other

Document 200, Ron Brockmann

Document 163, Bob O'Hara

Document 204, Menzo,

Document 205, Albert QoS

Document 194, Sunghun

Document 161, Alan

Document 178 Alex

Presentations of Papers

Document 137r5

Discussion

Direct Station to Station is allowed in existing PCF in infrastructure? Not currently allowed in infrastructure. There is confusing language in Clause 9, but clause 7 prohibits it.

Re-word "guaranteed rate" to "allocated rate", or "requested rate"

Work on language for mandatory (shall, must, etc)

Clarify that we don't expect all old devices to work in new environments.

Requirements of undue complexity, etc, should be moved to evaluation criteria.

General Security Requirements. IBSS and Infrastructure BSS's will have separate, independent security requirements. The intent is that the negotiation mechanism is the same for Infrastructure and IBSS.

Was any consideration given to authentication of management frames? User and station authentication are different. Consider this as a requirement??

General terms of support for QoS Streams. More specific language needed.

We have ruled out authentication of management frames. That would preclude backward compatibility with existing systems. On the other hand, it could be modal, if made an option.

If we support direct station to station, it adds requirements to security architecture.

1.2. Monday Evening Session

- i. 1. Called to order by John Fakatselis at 19:15.
- ii. Minutes taken by Michael Fischer because Tim Godfrey is giving a presentation at Tutorial #1 in parallel with this evening session.
- iii. 2. First presentation: Document 00/184 by Victoria Poncini (Microsoft)
- iv. Title: IEEE 802.11e QoS Application Scenarios
 1. **2.1. Presented how current Microsoft protocol stacks (Windows 98 2ed, Millennium, 2000; probably not Windows NT) operate between a QoS-aware application and the network interface hardware and driver software.**
 - a. A) Communication model uses RSVP and IntServ on end networks and DiffServ in the network core.

- i. • **The SBM entity in an 802.11 end network may be located at the AP, but does not have to be there.**
 - ii. • **RSVP-enabled routers are required at the boundary of the enterprise network.**
- b. B) *QoS-aware applications can use a QoS service provider entity that uses RSVP, or can communicate directly to TCP/IP using DSCP code points. Both of these reach the network interface via different NDIS mini-ports, and with the DSCP codes are mapped to 802.1p priorities. However, the network driver has no way (with existing software) to distinguish those frames that were passed through the QoS service provider path from those that were passed directly from a (possibly ill-behaved, bandwidth-hogging) application.*
 - i. • **The Microsoft QoS APIs applicable to LAN interfaces is based on priority-tagged frames using 4 priorities (802.1p tags). Best effort frames are not marked.**
 - ii. • **4 DSCP code points are used, mapped into appropriate ones of the 8 available. Highest priority for network management, high priority QoS frames, medium priority QoS frames, and best effort.**
 - iii. • **The presenter made it clear that Microsoft is not asking that this limitation of the current Windows protocol stack implementation be treated as a limitation for 802.11 MAC mechanisms, but to make 802.11 aware of the potential that priority tag values might not be generated via the RSVP/SBM path.**
- 2. 2.2. **Subset of discussion points following presentation:**
 - a. A) *It was noted that if the multimedia MAC was based on PCF the badly behaved application (which marks its packets highest priority) only hurts other applications at the same station, because the point coordinator can limit the amount of bandwidth that station can consume. Under DCF there is nothing to prevent a station with a badly behaved application from consuming a disproportionate amount of PHY capacity.*
 - b. B) *Some discussion concerning the need for 802.11 to support at least this degree of QoS, but noting that are also other protocol stacks & APIs, including DOCSIS, that have far more enforcement of policy and QoS.*
- v. 3. Second presentation: Document 00/176 by Bob O'Hara
- vi. Title: Perspective on the QoS Problem
- vii. Joint Authors: Keith Amann (Spectralink), Peter Ecclestine (Cisco), David Halasz (Cisco), Duncan Kitchin (Intel), Bob O'Hara (3Com), TK Tan (3Com), Steve Williams (Intel), Albert Young (3Com)
 - 1. 3.1. **Identifies problems with limited progress and questionable approach to defining the 802.11e functional**

requirements, especially as evident in the teleconferences held on this topic since the last meeting.

- a. A) *Problem with different objectives and incompatible terminology between various of the teleconference participants. A major example is proposed requirement for “toll quality audio.”*
 - i. • **There is no “toll quality” in an ISM band.**
 - ii. • **This implies protected spectrum & professional installation.**
 - iii. • **Applying apparatus from a 10e-12 world to a 10e-5 world is not worthwhile.**
- b. B) *Urges that the defined problem must drive the solution:*
 - i. • **The SAPs must be defined within the scope of 802 standards, in particular 802.1D (802.1p / 802.1q priority and VLAN ID tags), 802.2 LLC, interfaces direct to higher layers are not permitted (other than for station management).**
 - ii. • **Higher layers should not be duplicated in a MAC, higher layers already provide scheduling and admission control**
- c. C) *Necessary steps:*
 - i. • **Critically review document 00/137(r5).**
 - ii. • **Requirements must not assume form of a solution (e.g. error correction, peer-to-peer communication, etc. are possible solutions to demands of supporting an application, not requirements by themselves).**
 - iii. • **The underlying functional requirements must be defined first, then the mechanisms can be evaluated. Bob O’Hara generated 2 emails on the reflector which went into details on a possible approach to this topic.**
 - iv. • **Limit the solutions to those necessary to meet the application requirements.**
 - v. • **Eliminate duplication of higher layer functions. A list of more than 20 IETF standards which provide higher layer functions relevant to QoS and/or security are listed in the final pages of document 00/176.**
- d. D) *Requests the group to critically review 00/137(r5) based on these recommendations.*

2. 3.2. **Major discussion topics:**

- a. A) *Some application developers or network administrators like the fact that 802.11 hides the complexity of the wireless medium, others want to turn much of that functionality off (at least selectively) because it gets in the way of their applications. We should give the higher layers a lot more control over which*

internal functions (retries, delays, power save queuing, etc.) they perform for a given instance of communication.

- b. *B) The issue about “toll quality” in an ISM band is overstated, while it is not possible to provide guaranteed “toll quality” voice or video service, the problems occur due to catastrophic circumstances, and some consumer product providers see a real market for enabling voice and video at acceptable/achievable quality on a WLAN at the same time that somebody else is doing a 400MB file transfer.*
- c. *C) While not wanting to duplicate higher layer functions, we need to be careful to distinguish between mechanisms which actually duplicate higher layer functions and mechanisms which are similar to higher layer functions but are necessary in a WLAN MAC to make the ISM band MAC+PHY look sufficiently like a wired network to render those higher layer standards applicable.*
- d. *D) It was suggested that the application requirements belong in the evaluation criteria rather than in the standard.*
- e. *E) Potential users want all the throughput and QoS features that 802.11e can give them at this point in time, and will want even more as soon as, if not before, it becomes technically and politically possible to do better. Only the end-user-visible benefits allow companies deploying either products or delivery services to gain advantages from adoption of 802.11e.*
- f. *F) [several times ...] Don’t forget this is wireless, many of these higher layer mechanisms break totally when 20% of the frames never arrive.*
- g. *G) [several times ...] Simple solutions are distinctly preferable to complex solutions. A complex MAC does not imply that complex mechanisms are needed to add (or remove barriers to) QoS.*
- h. *H) It was suggested that the fundamental (QoS-relevant) limitations with the existing 802.11 MAC are stated on slide 2 of document 00/071 (the Joint Proposal slides presented in Seattle, May, 2000).*

i. • Text from 00/071 slide 2 copied here for reference:

ii. Why is it necessary to add new functionality within the 802.11 MAC sublayer to support QoS over wireless links?

1. - Higher layers assume that a LAN rarely loses or delays packets. WLAN PHY error rates are 3+ orders of magnitude greater than wired. So 802.11, unlike other 802 LANs, retransmits unacknowledged frames. Retrys cause unpredictable delays of tens to hundreds of milliseconds, and often block transmission of subsequent, queued frames.
2. - Wireless links incur very high per-packet MAC & PHY overhead: 802.3 framing+gap adds 3.2% to a 1500-octet

MSDU. 802.11B (11Mb/s)
 framing+gaps+Ack adds 32.6% (50.0% with
 RTS/CTS).

3. - CSMA/CA collisions and backoffs reduce usable bandwidth as the offered load in a BSS increases. Switching hubs cannot be used to isolate STA-to-STA traffic over wireless links.
 4. - QoS-aware coordination can reduce overhead, prevent collisions and prioritize queued frames to meet delay and jitter bounds.
- iii. • **In short, delay is too long and too variable, so selective limitations on retries, queuing delays, and time-to-live are the keys to achieving useful benefits, everything else is secondary (for the QoS portion of the PAR, not relative to security/authentication enhancements).**
 - iv. • **It was suggested that more rapid progress might occur by changing focus to new MAC functions needed by, and existing MAC functions that are obstacles to, implementation of QoS.**
- i. I) *Recent measurements of actual traffic indicates that the QoS mechanisms should emphasize “packets per second, not bytes per second.” In other words, the optimization of delivery of short MSDUs, since they dominate the actual load. The measured frame size distribution is strongly trimodal, with peaks at 1500 octets (bulk data transport), 586 octets (discovery frames), and <128 octets (everything else, including higher layer control & management frames, VoIP, streaming audio, etc.).*
 - j. J) *A developer of VoIP solutions supports the contention that lack of deterministic/consistent delays are the biggest problem.*
 - i. • **Asserted that the best approach would be to simplify MAC mechanisms and move complexity from the MAC to the application(s).**
 - ii. • **Believes that additional MAC functions are going to be special-purpose.**
 - iii. • **An unanswered question was raised about whether the applications that took on this complexity were going to be PHY-specific or whether the desire was to have to require PHY-aware applications (in addition to or instead of other items which call for a PHY-aware MAC).**
 - k. K) *An attempt to identify the principal functions that are needed to do QoS but are missing from the existing MAC and/or are present in the existing MAC but constitute an obstacle to QoS in their current form:*
 - 1) **time bound for delivery delay before discarding MPDU**
- viii. •

- ix. • 2) prioritized access (especially for selection of what to send when an overload occurs)
- x. • 3) a way to bypass power management queues (or at least to not give power save priority over all other delivery facilities)
- xi. • 4) latency & jitter control, including a service that attempts to provide consistent latency for access to a predefined amount of bandwidth, preferably using existing higher layer reservation mechanism(s)
- xii. • 5) better error control (to the extent this belongs at the MAC layer in the first place)
- xiii. • 6) plus the authentication & privacy enhancements discussed elsewhere
 1. 3.3. *How to get from here to there?*
 2. *Chair suggests that many different approaches are being advocated, that this discussion has been useful, and we should use these results and new approach to generate a list of new functions/changes, then filter this, along with the existing material in document 00/137, to derive the functional requirements to forward to the working group.*
 - a. A) *Have an ad-hoc group develop the new list tomorrow morning,*
 - b. B) *then go through line by line tomorrow afternoon at the TGe meeting.*
 - c. C) *Peter Ecclestine will lead the ad-hoc at 8:30 AM Wednesday in the courtyard (because no more meeting rooms are available). Participants should meet near the coffee urns in the foyer tomorrow morning.*

1.3. Tuesday PM

1.3.1. Meeting called to order at 1:00PM

1.3.2. Introduction

1.3.2.1. *Objective for today is to generate and approve a requirements document.*

1.3.2.2. *Proceed item by item through document 137 and supplement generated today.*

1.3.2.3. *Motion to hear Ad Hoc Requirements group presentation and incorporate with Document 137 for line item by line item review.*

1.3.2.3.1. *Moved Michael Fischer*

1.3.2.3.2. *Seconded Dennis Kuahara*

1.3.2.3.3. *Vote - Motion passes 27 : 0: 3*

1.3.3. Review of Ad Hoc Requirements activity

1.3.3.1. *Document 212, "QoS Properties", Peter Ecclestine*

1.3.3.2. *Item for review:*

**Bounded delay,
prioritized access,**

bounded latency per MSDU (allocatable service), power management bypass mechanism (which has priority in iBSS and BSS may need a mechanism separable for handsets).

1.3.3.3. Discussion

- 1.3.3.3.1. *Is there a need for the power management mechanism bypass? It is a needed correction in the standard, based on the current text.*

1.3.3.4. <i>Approved preceding requirement without objection</i>
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1.3.3.5. Item for review:

Authentication and security[not necessarily the same in iBSS and BSS].

- 1.3.3.5.1. *Remove section 4.1.1 from 137r5.*
 1.3.3.5.2. *Deal with this and the rest of section 4 of 137 when we deal with document 137*

1.3.3.6. Discussion

- 1.3.3.6.1. *Does the independence of QoS and security present a problem? Can we allow implementations to compromise one to achieve the other? The requirements say this is an implementer's decision.*
 1.3.3.6.2. *We should not make them mutually exclusive. They need to take into account each function.*
 1.3.3.6.3. *The one mandatory algorithm is the one that must be compatible with QoS. Other, optional security algorithms may affect QoS, and used only in non-QoS cases.*

- 1.3.3.7. *Discussion of process – do we attempt to merge document 137 and document 212 at the same time as we review and accept them? We will review document 212 and then document 137.*

1.3.3.8. Item for review

Higher layer support 802.1d/802.1q/.3ac VLAN

- 1.3.3.8.1. *Discussion of differences of 802.1d, 802.1q, etc. 802.1q supports tagging, as does .3ac for Ethernet. 802.1 priority mechanisms are well established.*
 1.3.3.8.2. *Suggestion that 802.3 is not a higher layer to 802.11, and should not be there.*
 1.3.3.8.3. *Are priorities in .1d and .1q are in the MAC? Aren't they outside the MAC? We have to map to the 8 priorities that 802.1d uses. The simpler the better, from the perspective of future standard maintenance work.*
 1.3.3.8.4. *Why is 802.3 relevant? 802.3ac has tagging for priority. But it is how 802.3 implements requirements from higher layers.*

- 1.3.3.8.5. *Move to divide item:*

1.3.3.8.6. Item for review

Higher layer support 802.1D/802.1Q

1.3.3.8.6.1. Resolution: Accepted without objection

1.3.3.8.7. Item for review

Higher layer support for 802.3ac VLAN

- 1.3.3.8.7.1. *Objections to this as a requirement*

1.3.3.8.7.2. Discussion

1.3.3.8.7.2.1. It makes no sense to adopt a requirement from another 802 MAC. It is a peer, not a higher layer.

1.3.3.8.7.2.2. There are things in 802.3 that apply to Ethernet, and not to 802.11.

1.3.3.8.7.3. Vote to accept item as requirement: fails
2:15:18

1.3.3.9. *Item for review*

Media aware mac -

Jason asks about forwarding errored packets to be soft-decision recombined. Steven Grey say 54Mbps with video, requires lots of dB snr IF NO SOFT-DECISION logic is present. Maybe the errors are near the front. Dynamic Frequency Selection. Transmit Power Control.

1.3.3.9.1. *Edited version:*

Add the capability for the MAC to receive and indicate frames that have good PLCP header and bad FCS.
Dynamic Frequency Selection.
Transmit Power Control.

1.3.3.9.2. *Discussion*

1.3.3.9.2.1. *How is a bad frame passed through the MAC SAP interface? It is possible. We shouldn't specify the way it is to be done. Other standards have allowed for "permissive receive". A new SAP could be defined. A new status code in the data.indicate could be defined.*

1.3.3.9.2.2. *Is the idea to combine multiple frames?*

1.3.3.9.2.3. *Why are these things grouped together? Based on the PAR, DFS and TPC are outside the scope of this standard?*

1.3.3.9.2.4. *Elsewhere in document 137 we propose per-packet authentication. This may interfere with allowing bad frames through the SAP. This means that a separate SAP is needed. Receiving raw bits off the network poses a security hole.*

1.3.3.9.2.5. *This requirement is a problem for the MAC layer. If you accept frames with bad FCS, it could affect the ACK response and hurt the network?*

1.3.3.9.2.6. *An application ability is in the case where coding algorithms could potentially use the bad data. It doesn't hurt to allow the possibility.*

1.3.3.9.2.7. *All of 802.11E will be optional. We are not changing the MAC to invalidate existing implementations. There is no risk to breaking the MAC. Recommends to make this first capability optional.*

1.3.3.9.2.8. *The original concept came from packet combining from 3G networks. There are other coding schemes that could take advantage of it. We do need to be concerned about security implications of raw bit access. Proposes adding test "subject to security conditions"*

1.3.3.9.3. Motion to amend (John Kowalski):

Add the capability for the MAC to receive and indicate frames that have good PLCP header and bad FCS [subject to security functional requirements being met].

1.3.3.9.3.1. Discussion –

1.3.3.9.3.1.1. Against amendment – we cannot satisfy security concerns – we will make a mess of incompatible option

1.3.3.9.3.1.2. Question called (dave B, second) Dave B)

1.3.3.9.3.1.3. Vote on call the question:

1.3.3.9.3.2. Vote (never taken – point of order)

1.3.4. Procedural discussion

1.3.4.1. Point of order – there needs to be a motion with a mover for each section.

1.3.4.2. We will have a mover and a motion for each motion from this point on.

1.3.4.3. The motion on the floor is the adoption of the last item for discussion as a requirement:

Add the capability for the MAC to receive and indicate frames that have good PLCP header and bad FCS.

1.3.4.3.1. Moved: Michael Fischer

1.3.4.3.2. Seconded: Steven Gray

1.3.4.3.3. Discussion:

1.3.4.3.3.1. There is an problem with the wireless media being less reliable than wired LANs. We have mechanisms in the MAC to compensate for this. Our standardized PHYs do not include error correction. We have had proposals for PHY-specific error correction functions in the MAC. The objective is to come up with some flexibility to deal with the case of a single bit error frame. Typical LAN applications cannot accept single bit error frames, so there is no general solutions at layer 2. Specific applications (audio coding for example) could use this data. This motion is superior to the option of attempting to incorporate error correction into the MAC.

1.3.4.3.3.2. Application requirements are for error rates in 10e-6 range. If we use some enhanced MAC, how will we achieve the needed error rates. Hybrid ARQ – ask for retransmission using the same modulation, and then pass it up to higher layers to be recovered by higher layers. This capability should be optional to give implementations a chance to meet packet loss requirements.

1.3.4.3.3.3. Existing applications do not check for errors. Would they get bad data? How will applications make use of the bad frames? Do we need to standardize this?

1.3.4.3.3.4. Calls the question (Anil S, seconded Dave B)

1.3.4.3.3.5. Vote on calling the question: passes 22:9:10

1.3.4.3.4. Vote on Motion: fails 8:27:8

1.3.5. Requirements Item

Dynamic Frequency Selection.

1.3.5.1. *How is it related to QoS: There is a need to locate a channel with minimal interference, and move channels when interference becomes a problem, in order to maintain QoS.*

1.3.5.2. *Motion to accept Dynamic Frequency Selection as a requirement*

1.3.5.2.1. *Moved Sid Schurm*

1.3.5.2.2. *Seconded Dave*

1.3.5.2.3. *Discussion*

1.3.5.2.3.1. Regarding QoS and DFS and TPC. The mechanism to quantify QoS relate to packet loss rate. Performance determined by S/N and interference. This could improve the overall air performance of the system. TPC has a similar effect Limiting power to the needed amount reduces overall background noise to other systems.

1.3.5.2.3.2. Question – are we saying that we are going to put in a general mechanism for DFS, or are there particular other standards we want to support? No other standard support is required.

1.3.5.2.3.3. There was some discussion that this came from a perceived requirement to meet European requirements. No, this goes way back to the study group.

1.3.5.2.3.4. The point is that the current standard in 802.11b provides a mechanism using the frequency agility option. What is missing? 802.11b does not include the sensing of the spectrum to make a decision.

1.3.5.2.3.5. We should have this as part of the MAC.

1.3.5.2.3.6. DFS is already in the standard. What is really needed is making measurements. Perhaps this should be changed to something like “spectrum management”. In favor of the concept.

1.3.5.2.3.7. These two items are being driven by the Hiperlan world. That is not what this group is authorized to do. 802.11 should start a separate WG to address this. Against this as something for 802.11E.

1.3.5.2.3.8. If we do not amend these to require ETSI compatibility, we don't really know what that means. We don't know if it would be useful beyond the capabilities already in 802.11b. We can now treat a PHY as both FH and DS for the purpose of frequency agility. Nothing shows how to do this with the 802.11a PHY. A interpretation request could yield a PAR to address this ambiguity. Against this

because it is better to do it in the right manner than do it twice.

1.3.5.2.3.9. There is also an AP autoconfiguration issue that could be significant.

1.3.5.2.4. Motion to Amend:

Support for channel characteristics to be passed to the station management entity.

1.3.5.2.4.1. Discussion

1.3.5.2.4.1.1. Clarify Channel characteristics – whatever the PHY provides. The MAC passes the information.

1.3.5.2.4.1.2. Amendment obscures the meaning. The original intent was to support ETSI requirements.

1.3.5.2.4.1.3. Is there a mechanism for station management to take action based on the channel characteristics? Could a network migrate to a channel with less interference?

1.3.5.2.4.1.4. The key ability is to allow the AP to command a station to measure the conditions on another frequency, and return the results.

1.3.5.2.4.1.5. The best way to achieve this is for adjacent BSS access point coordination. Instead of Dynamic frequency selection, perhaps dynamic channel selection is better.

1.3.5.2.4.1.6. There is not a PLME interface to allow this information to be passed from the PHY to the MAC. We would have to change the PHY as it is currently defined. We would need a PAR to modify the PHY to make this work.

1.3.5.2.4.1.7. We need to specify how to measure and what is going to be measured. RSSI must be consistent.

1.3.5.2.4.1.8. The ability of a network to migrate to avoid interference is key to achieving QoS. Against the amendment.

1.3.5.2.4.1.9. Call the question (Bob O)

1.3.5.2.4.1.10. Vote on Call the Question: 19:3:15

1.3.5.3. Vote on motion to amend: motion fails 0:26:12

1.3.5.4. Main Motion – accept the following requirement:

Dynamic Frequency Selection.

1.3.5.5. Discussion

1.3.5.5.1. *How does RSSI get through the PHY SAP? There is no mechanism in the PHY to define what RSSI means in a quantitative sense. There is not consistent way to compare between PHYs.*

1.3.5.5.2. *The requirements should be to define DFS without changing the PHY. This is impossible. RSSI is available to the MAC in RXvector only when valid data is being received. Scanning can find BSSs on other channels, though. DFS can be achieved without changing the MAC.*

1.3.5.5.3. Motion to Amend to:

Dynamic Channel Selection.

1.3.5.5.3.1. Moved Sunghyun Choi

- 1.3.5.5.3.2. Seconded Bob
- 1.3.5.5.3.3. Discussion
 - 1.3.5.5.3.3.1. The MAC only knows about channels, not frequencies. Supports the amendment.
 - 1.3.5.5.3.3.2. Mobile cellular systems are built on channel assignment.
- 1.3.5.5.3.4. Vote on amendment : passes 24:0:15

1.3.5.6. *Main Motion – accept the following requirement:*
Dynamic Channel Selection.

1.3.5.7. *Motion to call the question (Dave)*

1.3.5.7.1. *Vote on calling the question: passes 30:4:8*

1.3.5.8. *Vote on the main motion:*

1.3.5.8.1. *27:6:7*

1.3.5.9. <i>Repeat vote on main motion:</i>

1.3.5.9.1. <i>26:9:6 – Fails does not meet 75%.</i>

1.3.6. Requirements Item

1.3.6.1. *Motion to adopt transmit power control as a requirement*

Transmit Power Control.

1.3.6.2. *Moved David Halasz*

1.3.6.3. *Second Harry Worstell*

1.3.6.4. *Discussion*

- 1.3.6.4.1. *This would allow lower power consumption of devices, and lower interference with other devices.*
- 1.3.6.4.2. *This was originally proposed because of regulatory issues. What is the most efficient way to get this feature through the process into the standard?*
- 1.3.6.4.3. *TPC means the mobile terminal in a cell controls its power based on instructions from the AP in the downlink.*
- 1.3.6.4.4. *This has been studied significantly in the cellular world. It is an inexpensive way to improve the overall system's QoS.*
- 1.3.6.4.5. *The standard already has a power control mechanism for PHYs. PHY implementation is optional. Are the hooks there in the MAC already?*
- 1.3.6.4.6. *In the MIB of the current standard, there is a TX power table with 8 power levels. Is there anything that belongs in the MAC?*
- 1.3.6.4.7. *In favor of power control – as it is the foundation of numerous standards.*
- 1.3.6.4.8. *What is inadequate with the current the mechanism for controlling the transmit power. If the requirement is more, we need to define it better. Other standards have a feedback mechanism to indicate the expected receiver at the other end of the link. RSSI values are defined in a relative sense. How do you do this in the PHY. There is a need for the MAC to handle the feedback.*
- 1.3.6.4.9. *Regarding CEPT, Hiperlan specs require that a station operate within 3dB of the minimum requirement.*

That requires feedback. There is IP on the closed loop power control scheme. There are other approaches.

1.3.6.4.10. *We need to meet regulatory requirements to operate in Europe.*

1.3.6.4.11. *The proper time and place to make CEPT requirements in a separate group.*

1.3.6.4.12. *Motion to call the question: Dave, Anil*

1.3.6.4.12.1. *Vote on call the question: question called 20:1:12*

1.3.6.5. <i>Vote on main motion</i>

1.3.6.5.1. <i>Motion 25:7:8, passes 75% requirement.</i>
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1.3.7. Move to Recess until 7:00PM

1.3.7.1. *No Objections.*

1.3.8. Requirements Item

1.3.8.1.1. *Move that we include solutions to the overlapping BSS issues as functional requirements*

1.3.8.1.2. *Discussion*

1.3.8.1.2.1. *(none)*

1.3.8.1.3. *Move to amend:*

1.3.8.1.3.1. *Move that we include mitigation mechanisms to the overlapping BSS issues as functional requirements.*

1.3.8.1.3.2. *Moved Michael Fischer*

1.3.8.1.3.3. *Seconded Jesse Walker*

1.3.8.1.3.4. *Discussion on amendment*

1.3.8.1.3.4.1. *This is a good idea – there is a valid reason to not produce a standard that fails in the case of overlapping BSS's.*

1.3.8.1.3.5. *Call the question (Greg / Anil) Vote: 22:1:3. Question is called.*

1.3.8.1.3.6. *Vote on the amendment of the motion: Passes 17:0:11*

1.3.8.1.4. *Discussion of main motion*

1.3.8.1.4.1. *We don't know what the solutions are.*

1.3.8.1.4.2. *The problem could turn into a legal problem. So we need to try to mitigate the problem. In favor.*

1.3.8.1.4.3. *All we are saying is that a mechanism is required. In favor of motion.*

1.3.8.1.5. *Move to amend the motion:*

1.3.8.1.5.1. *Move that we do not include mitigation mechanisms to the overlapping BSS issues as functional requirements.*

1.3.8.1.5.2. *Moved Bob O*

1.3.8.1.5.3. *Second Dave B*

1.3.8.1.5.4. *Discussion on amendment*

1.3.8.1.5.4.1. *Can't tell if we are precluding mitigation mechanism. Against*

- 1.3.8.1.5.4.2. We should soften the original statement to say consider mitigation. Against.
- 1.3.8.1.5.4.3. Against motion. There is already text in the standard regarding BSS overlapping PCF.
- 1.3.8.1.5.4.4. Against motion. This precludes including a mitigation mechanism.
- 1.3.8.1.5.4.5. Belief that it should not be a requirement.
- 1.3.8.1.5.4.6. This is independent of existing mechanisms. This motion does not preclude including this feature in proposals. In favor
- 1.3.8.1.5.4.7. Call the question (Michael / John) Vote: 21:3:1
- 1.3.8.1.5.5. Vote on motion to amend – passes 12:6:7
- 1.3.8.1.6. *Main Motion as amended:*
- 1.3.8.1.6.1. Move that we do not include mitigation mechanisms to the overlapping BSS issues as functional requirements.
- 1.3.8.1.7. *Discussion on main motion*
- 1.3.8.1.7.1. We are operating on the assumption that all proposals must address all requirements. That is not true. We can have separate proposals for different subsets. If we don't have solutions for all requirements are we prohibited from going to sponsor ballot?
- 1.3.8.1.7.2. A requirement means it must be addressed if the proposal is on the subject of the requirement. The evaluation criteria evaluate how well the proposals address the requirements.
- 1.3.8.1.7.3. What if no proposals address a requirement?
- 1.3.8.1.7.4. What this motion says is that mitigation is not a requirement. We could still include it in the final standard.
- 1.3.8.1.7.5. Requirements are something that we must do. We are not setting limitations, but requirements. Extra value doesn't hurt. If requirements are not met, you can't go to letter ballot.
- 1.3.8.1.7.6. Parliamentary Inquiry – is it the view of the chair that either way we vote, we cannot make this a requirement? Yes, not at this session.
- 1.3.8.1.7.7. Why are we continuing debate? We should make a very simple, concise set of requirements.
- 1.3.8.1.7.8. From the sponsor ballot perspective, we want no requirements at all. On the other hand, we need specific requirements to evaluate requirements. Against the motion.
- 1.3.8.1.8. *Call the question (Dave B, Bob O) vote – 22:0:0*
- 1.3.8.1.9. *Vote on main motion – 14:10:0 fails due to lack of 75%.*

1.3.9. Motion to fix the time to adjourn at 9:30PM

- 1.3.9.1.1. *Moved Bob O'Hara*
- 1.3.9.1.2. *Seconded Steve*
- 1.3.9.1.3. *Vote – passes 18:1:5*

1.3.10. Requirements Item

Efficiency enhancements

Piggyback functions on each transmission

- 1.3.10.1.1. *Motion to include efficiency enhancements as part of the functional requirements.*
- 1.3.10.1.2. *Moved Amar Ghori*
- 1.3.10.1.3. *Second Greg Parks*
- 1.3.10.1.4. *Discussion*
 - 1.3.10.1.4.1. It is clear that existing efficiency is poor, but what can be achieved with respect to efficiency in the MAC? Against the motion because this can't be done.
 - 1.3.10.1.4.2. Historically, the MAC group did consider efficiency. However we could slow our progress by adopting this requirement. What is the metric for evaluation? If the objective is to improve handling of short data packets, then lets make that the requirement. Against the motion.
 - 1.3.10.1.4.3. This should not be a requirement. It is not clear enough.
- 1.3.10.1.5. *Motion withdrawn by mover, agreed by seconder*
- 1.3.10.1.6. *Cannot withdraw – .*

1.3.10.2. Motion to amend

- 1.3.10.2.1. *Motion to include in the functional requirements the requirement for mechanism(s) for improving the efficiency by reducing MAC overhead.*
- 1.3.10.2.2. *Moved Naftali C*
- 1.3.10.2.3. *Second Alan*
- 1.3.10.2.4. *Discussion*
 - 1.3.10.2.4.1. Efficiency is good. Any reasonable proposal will include efficiency enhancements. Against the amendment.
 - 1.3.10.2.4.2. This is already in the scope and purpose in the PAR. It is not necessary to repeat it in the requirements.
 - 1.3.10.2.4.3. In favor of the amendment – it makes the motion clearer.
 - 1.3.10.2.4.4. This is a good requirement. Would not approve a proposal without efficiency improvement. In favor of amendment.
- 1.3.10.2.5. *Call the question (naftali / john) vote passes 24:0:4*

1.3.10.3. *Vote on the motion to amend – passes 23:2:6*

1.3.10.4. *Main Motion:*

- 1.3.10.4.1. *Motion to include in the functional requirements the requirement for mechanism(s) for improving the efficiency by reducing MAC overhead.*
- 1.3.10.5. *Discussion on main motion*
- 1.3.10.5.1.1. Against the motion – this is not the same as the PAR. What is MAC overhead. The PCF could be seen as overhead. It could be negative.
- 1.3.10.5.1.2. Against the motion. If we do not find any improvements in MAC overhead with a otherwise good QoS Scheme, then it cannot be approved.
- 1.3.10.5.1.3. In favor. It is a good evaluator of proposals. Simplicity oriented schemes could result in more overhead, and wasted bandwidth.
- 1.3.10.5.1.4. This should be a selection criteria, not a requirement. Against the motion.
- 1.3.10.5.1.5. Voice is a real application that really needs efficiency enhancements.
- 1.3.10.5.1.6. Adopting this does not preclude efficiency enhancements, but would preclude an otherwise good proposal that does not increase efficiency.
- 1.3.10.5.1.7. It is in the PAR so it should be a requirement. Elements from proposals can be selected to meet the requirements.
- 1.3.10.5.1.8. To reduce overhead, we can't change the PHY. The majority of the overhead is there. What can we do? Are we defining a new MAC? We can't do that. Against the motion.
- 1.3.10.5.2. *Calls the Question (Tom / Steve) Vote passes 24:3:4*

1.3.10.6. <i>Vote on main motion: Fails 13:16:4</i>

1.3.11. Requirements Item

1.3.11.1. *Motion that we adopt document 137r5 items 1.1 and 1.2 as functional requirements.*

- 1.1. Any changes to the standard must be optional. This standard can not make a device conformant to the existing 802.11 standard non-conformant.
- 1.2. Any changes to the standard must remain compatible with legacy equipment (both APs and stations, and both DCF and PCF modes).
- 1.2.1. Association decisions must remain a policy decision of the AP or station and must not become requirements in the standard. IE, decisions to accept or reject association requests or admit association requests are outside the scope of the standard.
- 1.2.2. Changes to frame formats must be compatible with existing formats.
- 1.2.2.1. Capabilities must fit in remaining bits of CIF
- 1.2.2.2. Extensions to existing frames must use the information element data structure
- 1.2.2.3. New frame subtypes of existing types should be used in preference to the currently reserved fourth frame type.
- 1.2.3. New frame formats should be kept to the minimum required to meet the requirements.

- 1.3.11.1.1. *Moved David Bagby*
- 1.3.11.1.2. *Second John Kowalski*
- 1.3.11.1.3. *Discussion*
 - 1.3.11.1.3.1. Although it looks complicated, the principle is simple – we don't break the equipment that is already shipping.
 - 1.3.11.1.3.2. Objections to the wording in 1.2.1 regarding accept or rejecting associations.
 - 1.3.11.1.3.3. The intent of 1.2.1 is correct, but it goes too far. There are already requirements where rejection of association is required.
- 1.3.11.1.4. *Motion to amend:*
- 1.2.2.2. Extensions to existing frames must use the information element data structure or existing reserved bits
 - 1.3.11.1.4.1. *Moved Michael F*
 - 1.3.11.1.4.2. *Second Steve*
- 1.3.11.1.5. *Discussion on Motion to amend*
- 1.3.11.1.6. *Call the question (no objection)*
- 1.3.11.1.7. *Vote on motion to amend – 26:0:1*
- 1.3.11.2. *Call the question on the main motion (Dave B / Dave) vote – call the question fails 4:12:6*
- 1.3.11.3. *Discussion of the main motion*
 - 1.3.11.3.1. *What does 1.2.2 really mean? We have discussed using a registry to specify algorithms. If we used 1363 as our registry, the algorithms would be in ASN1. Would 1.2.2 allow this?*
- 1.3.11.4. *Motion to amend 1.2.1*
- 1.2.1. Association acceptance decisions must remain a policy decision of the AP or station and must not become requirements in the standard.
 - 1.3.11.4.1. *Moved Tom*
 - 1.3.11.4.2. *Second Michael*
 - 1.3.11.4.3. *Discussion*
 - 1.3.11.4.3.1. It is redundant
- 1.3.11.5. *Vote on motion to amend – passes 17:0:11*
- 1.3.11.6. **Current motion: Motion that we adopt document 137r5 items 1.1 and 1.2 as functional requirements.**
 - 1.1. Any changes to the standard must be optional. This standard can not make a device conformant to the existing 802.11 standard non-conformant.
 - 1.2. Any changes to the standard must remain compatible with legacy equipment (both APs and stations, and both DCF and PCF modes).
 - 1.2.1. Association acceptance decisions must remain a policy decision of the AP or station and must not become requirements in the standard.
 - 1.2.2. Changes to frame formats must be compatible with existing formats.
 - 1.2.2.1. Capabilities must fit in remaining bits of CIF
 - 1.2.2.2. Extensions to existing frames must use the information element data structure or existing reserved bits

1.2.2.3. New frame subtypes of existing types should be used in preference to the currently reserved fourth frame type.

1.2.3. New frame formats should be kept to the minimum required to meet the requirements.

1.3.11.7. *Call the question on the main motion (Tom / Amar)*

1.3.11.8. *Vote passes 23:1:1*

1.3.12. Discussion of parliamentary issue

1.3.12.1. *Chair rules that the motion to amend that negated the meaning was out of order. That motion is ruled as null and void. The body has the right to appeal.*

1.3.12.2. *If no one wants to reconsider this ruling, we are adjourned.*

1.3.13. At 9:30PM, adjourn session until 10:30AM Wednesday

1.4. Wednesday AM Session

1.4.1. Session called to order at 10:30AM

1.4.2. Introduction

1.4.2.1. *Agenda overview*

1.4.3. Procedure on finalization of response to point of order.

1.4.3.1. *Review of situation*

1.4.3.2. *Straw Poll on decision*

1.4.3.3. *Chair will rule based on result of straw poll*

1.4.3.4. *Body has the right to appeal chair ruling*

1.4.4. Discussion of Roberts Rules

1.4.4.1. *from www.constitution.org/rror/rror-05.htm32*

1.4.4.2. *Point of Order*

1.4.4.2.1. *Based on the RROR text, would changing the wording to a negation prevent taking up the issue again?*

1.4.4.2.2. *Parliamentarian's opinion is that a single topic can be dealt with once in a meeting of a group.*

1.4.4.3. *Straw Poll – is it improper to negate an existing motion via an amendment? 28 : 13 : 16*

1.4.4.4. *As a result, the chair rules that the motion was improper, and the vote is null and void. This decision will set a precedent for future similar situations.*

1.4.4.5. *Discussion*

1.4.4.5.1. *Can this decision be a precedent?*

1.4.4.5.2. *Chair decides to not make a definite precedent, but will consider situations, based on Roberts Rules, as they occur.*

1.4.4.6. *The original Motion (before disallowed amendment) is on the table again.*

1.4.5. Requirements Item

1.4.5.1. *Move that we include mitigation mechanisms to the overlapping BSS issues as functional requirements.*

1.4.5.2. Discussion

1.4.5.2.1. *If this is a requirement we are forced to include a solution, or amend the requirements if we cannot meet it.*

1.4.5.2.2. *There is a problem here. Some desire minimalist requirements, others want to capture the essence of the PAR. This is an ongoing debate. There is a middle ground but we are not heading there. Speaks against this, since the best we can achieve the minimal set due to lack of agreement.*

1.4.5.2.3. *Based on previous 802.11 groups have operated, adding this says you must do it to go to ballot, but not having it do it doesn't preclude doing it.*

1.4.5.3. *Call the Question – (Michael, Anil) Vote 36:2:3*

1.4.5.4. *Vote on main motion – fails 11 : 18 : 11.*

1.4.6. Discussion of procedure from yesterday

1.4.6.1. *Motion that we adopt the items in the minutes of 1.1.3.2 the requirements that were approved yesterday.*

Bounded delay,
prioritized access,
bounded latency per MSDU (allocatable service), power management
bypass mechanism (which has priority in iBSS and BSS may need a
mechanism separable for handsets.

1.4.6.2.

1.4.6.2.1. *Moved John Kowalski*

1.4.6.2.2. *Seconded Harry Worstell*

1.4.6.3. Discussion

1.4.6.3.1. *This cannot be met, so it may need to be amended.*

1.4.6.3.2. *Call the Question (Anil / John) 26:2:5*

1.4.6.3.3.

1.4.6.4. *Vote on Motion – passes 32:4:5*

1.4.7. Requirements Item (from Document 137r5)

1.4.7.1. *Motion to approve the security requirements in document 137r5 section 4.1, with the exception of section 4.1.1*

4.1. General

4.1.2. The standard must add at least one extension to the authentication algorithms that provides mutual authentication in both Infrastructure and Independent BSSs.

4.1.3. In the standard, security requirements are independent of QoS requirements. However, implementers should be aware of the potential interactions.

4.1.3.1. The extensions to the standard should not be constrained by QoS requirements.

4.1.3.2. It is an implementer decision as to which algorithms are to be used and whether that choice is compatible with QoS requirements.

1.4.7.1.1. *Moved Jesse Walker*

1.4.7.1.2. *Second John Kowalski*

1.4.7.2. Discussion

1.4.7.2.1. *Motion to amend text to read:*

4.1. General

4.1.2. The standard must ~~provide for add at least one extension to the authentication algorithms that provides~~ mutual authentication in both Infrastructure and Independent BSSs.

4.1.3. In the standard, security requirements are independent of QoS requirements. However, implementers should be aware of the potential interactions.

4.1.3.1. The extensions to the standard should not be constrained by QoS requirements.

4.1.3.2. It is an implementer decision as to which algorithms are to be used and whether that choice is compatible with QoS requirements.

1.4.7.2.1.1. moved Dave Halasz

1.4.7.2.1.2. Second Peter E

1.4.7.2.2. *Discussion*

1.4.7.2.2.1. This amendment weakens the requirement.

1.4.7.2.2.2. This amendment provides for wider solutions.

1.4.7.2.2.3. We have a charter to enhance the MAC. We already have the ability to authenticate above the MAC. We need mutual authentication in the MAC. Users without higher layer authentication will need to rely on the MAC. Against the amendment.

1.4.7.2.3. *Vote on the amendment – fails 9:12:20*

1.4.7.3. *Return to Main Motion:*

1.4.7.4. *Motion to approve the security requirements in document 137r5 section 4.1, with the exception of section 4.1.1*

4.1. General

4.1.2. The standard must add at least one extension to the authentication algorithms that provides mutual authentication in both Infrastructure and Independent BSSs.

4.1.3. In the standard, security requirements are independent of QoS requirements. However, implementers should be aware of the potential interactions.

4.1.3.1. The extensions to the standard should not be constrained by QoS requirements.

4.1.3.2. It is an implementer decision as to which algorithms are to be used and whether that choice is compatible with QoS requirements.

1.4.7.5. *Discussion*

1.4.7.5.1. *Concern over 4.1.3.1 – If we develop a security requirement that precludes QoS, it will be a problem. A re-statement is needed.*

1.4.7.5.2. *Security cannot be ignored because of QoS, either. We need a solution that satisfies both.*

1.4.7.5.3. *There is an implicit priority that QoS takes precedence over security. They are at equal status in the PAR. The statement belongs as it is.*

1.4.7.5.4. *The wording is “should” not “must”. We have an objective to not force customers to choose between QoS and Security. We don’t know if there is an issue. In favor of adopting this.*

1.4.7.5.5. *Does 4.1.3.2 put everything in up in the air? The intended scope is to allow organizations to add proprietary extensions to the standard.*

1.4.7.6. *Move to Amend:*

4.1.3.2. It is an implementer decision as to which algorithms are to be used over and above the baseline standard and whether that choice is compatible with QoS requirements.

1.4.7.6.1. *Moved Steve Williams*

1.4.7.6.2. *Second Bob O'Hara*

1.4.7.6.3. *Discussion on motion to amend*

1.4.7.6.3.1. We are discussion the requirements. 4.1.3 specifies what are not requirements.

1.4.7.6.3.2. Call the Question (anil / john) 29:0:1

1.4.7.6.4. *Vote on amendment – passes 18:2:14*

1.4.7.7. *Motion as amended:*

1.4.7.8. *Motion to approve the security requirements in document 137r5 section 4.1, with the exception of section 4.1.1*

4.1. General

4.1.2. The standard must add at least one extension to the authentication algorithms that provides mutual authentication in both Infrastructure and Independent BSSs.

4.1.3. In the standard, security requirements are independent of QoS requirements. However, implementers should be aware of the potential interactions.

4.1.3.1. The extensions to the standard should not be constrained by QoS requirements.

4.1.3.2. It is an implementer decision as to which algorithms are to be used over and above the baseline standard and whether that choice is compatible with QoS requirements.

1.4.7.9. *Call the question on the main motion (Amar / Michael) 29:2:1*

1.4.7.10. *Vote on main motion – Passes 29:2:4*

1.4.8. Requirements Item

1.4.8.1. *Motion to approve the text in document 137r5 section 1.3 as requirements.*

1.3. Functional requirements must be fully specified

1.3.1. Requirements must be stated in measurable terms and units.

1.3.1.1. Minimum acceptable functionality, to be used as a gate for proposals.

1.3.2. Requirements for delivery of multimedia data streams must be related to known data types/rates and human perception of error/loss.

1.3.2.1. {we will generate a list of specific applications, performance numbers and source standards to be inserted here}

1.4.8.2. *Discussion*

1.4.8.2.1. *This is a self referential statement, that should not go into a requirements document.*

1.4.8.2.2. *This is not complete text. Until we can supply these specific items, the requirements are not complete. This is an incomplete area from the teleconferences.*

- 1.4.8.2.3. *We should put a stake in the ground to accomplish specific unambiguous things.*
- 1.4.8.2.4. *There are minimum application levels that we can require support of. They are achievable, and we should list them.*
- 1.4.8.2.5.

1.4.8.3. <i>Vote on motion - Fails with 11:20:5</i>

1.4.9. Agenda update

- 1.4.9.1. *Motion to meet at 8:00 PM*
- 1.4.9.2. *Will be discussed at Plenary session this afternoon.*

1.4.10. Adjourn.

1.5. Wednesday Afternoon Session

1.5.1. Called to order at 3:50PM

1.5.2. Intro

- 1.5.2.1. *Continue on requirements process*
- 1.5.2.2. *Jesse Walker acting as editor of document 137*
- 1.5.2.3. *Discussion*
 - 1.5.2.3.1. *How many more items are there to work? How can we make more progress.*
- 1.5.2.4. *Motion to limit debate per item to 10 minutes per motion.*
 - 1.5.2.4.1. *Moved John Kowalski*
 - 1.5.2.4.2. *Seconded Steve Williams*
 - 1.5.2.4.3. *Discussion*
 - 1.5.2.4.3.1. *We need to make progress.*
 - 1.5.2.4.4. *Vote passes 23:0:0*
- 1.5.2.5. *Motion to limit each individual speaker to two minutes*
 - 1.5.2.5.1. *Chair approves and will follow recommendation.*

1.5.3. Requirements Items

- 1.5.3.1. *Motion to strike 2.1.2 in document 137r5 and adopt 2.1.1 with document 196 replacing 143.*
 - 1.5.3.1.1. *Moved Michael Fischer*
 - 1.5.3.1.2. *Second Greg Parks*
 - 1.5.3.1.3. *Discussion*
 - 1.5.3.1.3.1. *Does this make document 196 as part of the requirements? Does it freeze document 196? Document 196 is still in process.*

1.5.3.1.4. <i>Vote – 7:4:14, fails due to lack of 75%</i>

1.5.4. Requirements Items

2.2. Higher Layers

- 2.2.1. *The QoS definition should be higher layer agnostic.*
- ~~2.2.2. *Accept the indicates and requests of 802.3ac (VLANs), and add to it as appropriate for mobility and security and regulatory compliance.*~~

- 2.2.3. Support the Inter Access Point Protocol recommended practices being developed by 802.11 Task Group F.
- 2.2.3.1. Support for terminal assisted handoff decisions (to insure media stream can be handled by new AP before disconnect).
- 2.2.3.2. Support for load balancing within the ESS.
- 2.2.4. Should adhere to existing or upcoming IETF standards.
- 2.2.4.1. IETF and 802.1 QoS support.
- 2.2.4.2. Do not duplicate functions provided by higher layer standards, except where the nature of the wireless medium breaks an assumption of the higher layer standard.

1.5.4.1. Discussion

1.5.4.1.1. How can 2.2.2 be compatible with specific higher layers .

1.5.4.1.2. 2.2.2 was removed in a previous motion. (In minutes section 1.3.3.8.7.3)

1.5.4.2. Move to accept 2.2.4.2 as a functional requirement

2.2.4.2 Do not duplicate functions provided by higher layer standards, except where the nature of the wireless medium breaks an assumption of the higher layer standard.

1.5.4.2.1. Moved Bob O'Hara

1.5.4.2.2. Seconded Michael Fischer

1.5.4.2.3. Discussion

1.5.4.2.3.1. (none)

1.5.4.2.4. Vote – passes 22:0:4

1.5.4.3. Move to accept 2.2.3

- 2.2.3. Support the Inter Access Point Protocol recommended practices being developed by 802.11 Task Group F.
- 2.2.3.1. Support for terminal assisted handoff decisions (to insure media stream can be handled by new AP before disconnect).
- 2.2.3.2. Support for load balancing within the ESS.

1.5.4.3.1. Moved Keith Amman

1.5.4.3.2. Discussion

1.5.4.3.2.1. This makes a requirement to support something that is not defined, and may never be defined.

1.5.4.3.2.2. TGF doesn't have specific requirements for interacting with TGe. They are deferring that decision.

1.5.4.4. Motion withdrawn by mover

1.5.4.5. Motion to adopt 2.2.3.1

- 2.2.3.1. Support for terminal assisted handoff decisions (to insure media stream can be handled by new AP before disconnect).

1.5.4.5.1. Moved Keith Amman

1.5.4.5.2. Second Sri Kendala

1.5.4.5.3. Discussion

1.5.4.5.3.1. What does it mean by disconnect? It had better be in the MAC.

1.5.4.5.3.2. Do we have a solution for this?

1.5.4.5.3.3. What is meant by terminal and terminal assisted? That phrase is from the cellular world. In our case it is AP assisted handoff.

- 1.5.4.5.3.4. This seems to recommend a solution to uninterrupted media streams.
- 1.5.4.5.3.5. Doing something like this is not trivial (from the cellular perspective). We may need PHY modifications.
- 1.5.4.5.3.6. There is also a security issue. Session keys may need to be passed.

1.5.4.5.4. *Vote on the motion – fails 3:15:17*

1.5.5. Requirements Items

3.1. Corrections to the PCF, such as those identified by NWN and Philips, as well as those that may be identified during further design of the protocol to meet the QoS requirements must be incorporated. {refs to papers}

1.5.5.1. *Motion: Enhancements to the PCF that may be required to best meet QoS performance objectives must be incorporated.*

1.5.5.1.1. *Moved Bob O'Hara*

1.5.5.1.2. *Seconded Harry Worstell*

1.5.5.1.3. *Discussion*

1.5.5.1.3.1. These requirements deal with editorial errors from the original standard, not QoS

1.5.5.1.3.2. Correcting these issues will help with QoS by improving functional requirements.

1.5.5.1.4. *Move to amend to:*

1.5.5.1.4.1. *Motion: Corrections and enhancements to the PCF that may be required to best meet QoS performance objectives must be incorporated.*

1.5.5.1.4.2. *Moved Bob O*

1.5.5.1.4.3. *Seconded Michael*

1.5.5.1.5. *Question Called – no objection*

1.5.5.1.6. *Vote on amendment – passes 30:0:4*

1.5.5.1.7. *New Main Motion:*

1.5.5.2. *Motion: Corrections and enhancements to the PCF that may be required to best meet QoS performance objectives must be incorporated.*

1.5.5.3. *Discussion*

1.5.5.3.1. *This does not affect the DCF. We are not prohibited from changing the DCF, though.*

1.5.5.4. *Call the question – no objection*

1.5.5.5. *Vote on the main motion – passes 26:3:3, 75%*

1.5.6. Requirements Items

3.2. If the PCF as it is currently defined is used, the use of the isochronous extension enabled by 802.11b is preferred, adding an external scheduling mechanism and the minimal necessary connection/bandwidth negotiation management frames.

3.2.1. Extending the MAC Management SAP may be necessary to provide the needed indications and requests to support an external scheduler, i.e., something that is outside of the scope of the standard.

3.2.2 The current MAC data interface is sufficient to support the necessary data scheduling at both the AP and station.

1.5.6.1. Discussion

1.5.6.1.1. *What is the isochronous extension in 802.11b? This refers to the extension of beacon contents in 802.11b for DS and FH elements, allowing a scheduling of beacon.*

1.5.6.2. Motion to adopt this text:

3.2. If the PCF as it is currently defined is used, the use of the channel agility option in 802.11b is preferred, adding an external scheduling mechanism and the minimal necessary connection/bandwidth negotiation management frames.

3.2.1. Extending the MAC Management SAP may be necessary to provide the needed indications and requests to support an external scheduler, i.e., something that is outside of the scope of the standard.

3.2.2 The current MAC data interface is sufficient to support the necessary data scheduling at both the AP and station.

1.5.6.3. Discussion

1.5.6.3.1. *Does this restrict the use of the PCF? The wording is "preferred", not "required".*

1.5.6.3.2. *The HRb study group is only including things that must be done. A separate list of "nice to have" items as part of evaluation criteria.*

1.5.6.3.3. *Is this an implementation issue or a requirement? The intention is to inform the authors of proposals and encourage them to use the mechanisms in the standard today.*

1.5.6.3.4. *This is a preference not a requirement.*

1.5.6.4. <i>Vote on motion – fails 4:25:4</i>

1.5.7. Requirements Item

1.5.7.1. *Motion to provide the hooks for dynamic channel selection in the MAC.*

1.5.7.1.1. Discussion

1.5.7.1.1.1. *Is this out of order*

1.5.7.1.1.2. *This motion is to provide the hooks, not the function.*

1.5.7.1.1.3. *Is this possible without modifying the PHY?*

1.5.7.1.2. *Motion is not allowed. Motion from yesterday may be rescinded by a vote.*

1.5.7.1.3. Discussion

1.5.7.1.4. *Mover amends motion:*

1.5.7.2. *Motion to accept the following as a requirement: To provide the hooks in the MAC to obtain remote channel information.*

1.5.7.3. *Moved Wim D*

1.5.7.4. *Second John K*

1.5.7.5. Discussion

1.5.7.5.1. *How does this apply to QoS or Security? Is it in the PAR?*

- 1.5.7.5.2. *In the case of interference, QoS will be impaired. Finding another channel can improve QoS.*
- 1.5.7.5.3. *Clarify the meaning of the word remote. The intent is that information can be gathered from stations about their channel situation and interference.*
- 1.5.7.5.4. *In an interference limited environment, it is important to know the interference in the band for QoS. In favor.*
- 1.5.7.5.5. *None of the PHYs provide anything other than RSSI. In essence the MAC already does this through a .INDICATE.*
- 1.5.7.5.6. *This makes sense. It says remote channel information, not just PHY information. Error rates, for example. It doesn't require PHY specific information.*
- 1.5.7.6. *Call the question – 13:1:6*
- | |
|---|
| 1.5.7.7. <i>Vote on main motion – passes 20:3:7</i> |
|---|

1.5.8. Adjourn at 5:15

1.6. Thursday Morning Session

1.6.1. Called to order at 8:30

1.6.2. Intro

- 1.6.2.1. *Jesse Walker, serving as Editor, has collected requirements that have been approved so far, and others that still need discussion.*
- 1.6.2.2. *Motion that debate be limited to 10 minutes per motion.*
- 1.6.2.2.1. *Moved Peter E*
- 1.6.2.2.2. *Seconded Michael F*
- 1.6.2.2.3. *Vote on motion – 32:0:1*
- 1.6.2.3. *Motion that the 802.11e task group adopt the following non binding policy regarding document features and functions that pertain to its workscope: That features and functions that the Task Group deems must be implemented shall be documented in the requirements document, and that features and functions the Task Group deems desirable yet optional shall be documented in the evaluation criteria document.*
- 1.6.2.3.1. *Moved Sid Schrum*
- 1.6.2.3.2. *Point of Information*
- 1.6.2.3.2.1. *Is it the intent that things that things not document shall not be considered? Yes*
- 1.6.2.3.2.2. *What is meant by non-binding policy? This is guidance, but we are not held to it as a rule.*
- 1.6.2.3.2.3. *Do you think that this will achieve the objective? Yes.*
- 1.6.2.3.3. *Seconded Steve Gray*
- 1.6.2.3.4. *Discussion*

- 1.6.2.3.4.1. The desire is laudable, and would be a source of information for the proposers and task group. As it is worded, it is not effective.
- 1.6.2.3.4.2. It may prevent certain proposals from being considered. Against the motion.
- 1.6.2.3.4.3. We have already worked through the requirements, so this is late.
- 1.6.2.3.4.4. This is so mild it simply states what we ought to be doing.
- 1.6.2.3.5. *Motion to amend:*
- 1.6.2.3.6. *Motion that the 802.11e task group adopt the following ~~non-binding~~ policy regarding document features and functions that pertain to its workscope: That features and functions that the Task Group deems must be implemented shall be documented in the requirements document, and that features and functions the Task Group deems desirable yet optional shall be documented in the evaluation criteria document.*
 - 1.6.2.3.6.1. Moved Steve Gray
 - 1.6.2.3.6.2. Second John K
 - 1.6.2.3.6.3. Discussion on motion to amend
 - 1.6.2.3.6.4. This becomes a fairly dangerous statement. Requirements should be a minimum bar, not a limitation.
 - 1.6.2.3.6.5. This makes the limitation binding.
- 1.6.2.3.7. *Vote on amendment – fails 6:15:13*
- 1.6.2.3.8. *Return to Main Motion:*
- 1.6.2.4. *Motion that the 802.11e task group adopt the following non binding policy regarding document features and functions that pertain to its workscope: That features and functions that the Task Group deems must be implemented shall be documented in the requirements document, and that features and functions the Task Group deems desirable yet optional shall be documented in the evaluation criteria document.*
 - 1.6.2.4.1. *Discussion*
 - 1.6.2.4.1.1. What is meant by evaluation criteria? Does it exist? It does exist.

1.6.2.5. <i>Vote on main motion: fails 2:22:15</i>
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1.6.3. Working Document 231

- 1.6.3.1. *Classification of every line in document 137r5 into one of 6 categories:*
 - 1.6.3.1.1. *Accepted – ¾ vote passes*
 - 1.6.3.1.2. *Rejected – did not pass ¾ vote*
 - 1.6.3.1.3. *Didn't get to, but clearly a Yes*
 - 1.6.3.1.4. *Didn't get to, requires discussion*
 - 1.6.3.1.5. *Didn't get to, probably not a requirement*
 - 1.6.3.1.6. *Redundant.*

1.6.4. Item**1.6.4.1. Motion that we accept items 3.3 and 3.5 as requirements**

- 3.3. Support for multiple priorities and classes of service.
 3.5. Support for multiple simultaneous streams with differing priority and class requirements.

1.6.4.1.1. Moved Amar G

1.6.4.1.2. Seconded Michael F

1.6.4.2. Discussion

1.6.4.2.1. If it is a requirement it needs to be covered by the evaluation criteria.

1.6.4.2.2. Is this redundant with the requirement to support 802.1d and .1q? The reason this makes sense is because the previous motion allows mapping everything to one priority. This prevents that. We will preserve and act on those priorities.

1.6.4.3. Move to divide

1.6.4.3.1. Move Steve W

1.6.4.3.2. Second John K

1.6.4.3.3. Vote – passes 20:0:10

1.6.4.4. Motion that we accept items 3.5 as requirements.

- 3.5. Support for multiple simultaneous streams with differing priority and class requirements.

1.6.4.4.1. Discussion

1.6.4.4.1.1. What is a class requirement?

1.6.4.5. Vote – 32:0:2

1.6.4.6. Motion that we accept items 3.3 as requirements

- 3.3. Support for multiple priorities and classes of service.

1.6.4.7. Discussion

1.6.4.7.1. This is ambiguous. If the requirement is more than two as in the current standard, then this should be stated.

1.6.4.8. Move to amend**1.6.4.9. Motion that we accept item 3.3 as requirements**

- 3.3. Support for additional priorities and classes of service.

1.6.4.9.1. Moved John K

1.6.4.9.2. Second Steve W

1.6.4.9.3. Vote on amendment – passes 24:2:3

1.6.4.10. Discussion on the main motion

1.6.4.10.1. This is a statement of a solution. Saying that we have to support QoS with classes and priorities of service. It could eliminate proposals.

1.6.4.10.2. This doesn't say that the implementation has to use priorities as a mechanism, but that things with priorities get handled that way.

1.6.4.10.3. The real requirement is that items supplied to the MAC with priorities are handled as such.

1.6.4.11. Motion to amend**1.6.4.12. Motion that we accept item 3.3 as requirements**

Differential handling of MSDUs supplied to the MAC with additional priorities and classes of service.

1.6.4.12.1. *Moved Bob O*

1.6.4.12.2. *Seconded Michael F*

1.6.4.12.3. *Discussion*

1.6.4.12.3.1. *Refine the word differential*

1.6.4.12.4. *Vote on amendment: 19:3:8*

1.6.4.13. *Call the Question (John/Michael) no objection*

1.6.4.14. *Vote on main motion – passes 28:2:5*

1.6.5. Requirements Item

1.6.5.1. *Move to accept 4.2.2, 4.2.3, and 4.3.2 as requirements*

4.2.2. Security framework must be able to prevent unauthorized access by unauthenticated peers over the link.

4.2.3. Security framework must allow for mutual authentication of STA and AP.

4.3.2. Security framework must allow for authentication of the source of each packet, to prevent link hijacking or undetected insertion of rogue packets into the link.

1.6.5.1.1. *Moved Amar G*

1.6.5.1.2. *Seconded Steve W*

1.6.5.2. *Discussion*

1.6.5.2.1. *Motion to amend - withdrawn*

1.6.5.2.2. *Is the language appropriate for a requirement? In the security community, prevents means computationally infeasible. We could change “must be able to” to “counter”.*

1.6.5.2.3. *Does 4.3.2 include management frames? The intent is data. Packets don't exist in layer 2. Management frames are not packets.*

1.6.5.2.4. *In favor. It is not saying it has to be used all the time.*

1.6.5.3. *Call the Question (Steve / John) no objection*

1.6.5.4. *Vote on motion – passes 28:1:3*

1.6.6. Requirements Item

1.6.6.1. *Motion that 4.4.1, 4.4.2 and 4.5.2.2 be incorporated into functional requirements*

4.4.1. Security framework must allow key distribution or derivation of per-link or per-session keys.

4.4.2. Security framework must strongly protect keys and passwords from recovery by eavesdropper.

4.5.2.2. The standard should specify one set of algorithms as mandatory when security extensions are implemented.

1.6.6.1.1. *Moved Bob O*

1.6.6.1.2. *Seconded Sri*

1.6.6.2. *Discussion*

1.6.6.2.1. *This will limit us to one set of mandatory algorithms.*

- 1.6.6.2.2. *We must provide a minimum base of algorithms for interoperability. Disagrees that this is limited to only one. More than one is allowable.*
- 1.6.6.3. *Motion to amend to:*
- 1.6.6.4. *Motion that 4.4.1, 4.4.2 and 4.5.2.2 be incorporated into functional requirements*
- 4.4.1. *Security framework must allow key distribution or derivation of per-link or per-session keys.*
- 4.4.2. *Security framework must strongly protect keys and passwords from recovery by eavesdropper.*
- 4.5.2.2. *The standard must specify at least one set of algorithms as mandatory when security extensions are implemented.*
- 1.6.6.4.1. *Moved Tom T*
- 1.6.6.4.2. *Seconded Bob O*
- 1.6.6.4.3. *Vote on motion to amend – passes 28:0:4*
- 1.6.6.5. *Discussion*
- 1.6.6.5.1. *Regarding 4.5.2.2, is algorithm referring to the method, or the data encoding? There is a standard set of cryptographic techniques applied. We should use a technique from that set.*
- 1.6.6.5.2. *We need for this to be clear, or it will cause arguments later.*
- 1.6.6.5.3. *Does this mean that the one set has to work in all environments and cases? That is not the intent. That is why we say at least one, to allow more.*
- 1.6.6.6. *Call the question (Sri / John) no objection*
- 1.6.6.7. *Vote on main motion – passes 31:1:3*

1.6.7. Break until 10:15

1.6.8. Requirements Item

- 1.6.8.1. *Document 231, Item 4.6*
- 4.6. Security framework must scale to: (? , priority 1)
- 4.6.1. Simple environments (etc., home, SOHO) (? This needs to be reworded into something feasible)
- 4.6.2. Ad hoc wireless LANs
- 4.6.3. Enterprise environments (e.g., office campuses, factories)
- 4.6.4. Public environments (e.g., hotels, public services)
- 1.6.8.2. *Discussion*
- 1.6.8.2.1. *Point of information : 4.6 with 4 sub-points.*
- 1.6.8.3. *Motion to accept text of 4.6 as a requirement*
- 4.6. Security framework must scale to:
- 4.6.1. Simple environments (etc., home, SOHO)
- 4.6.2. Ad hoc wireless LANs
- 4.6.3. Enterprise environments (e.g., office campuses, factories)
- 4.6.4. Public environments (e.g., hotels, public services)
- 1.6.8.3.1. *Moved Dave H*
- 1.6.8.3.2. *Seconded Michael F*
- 1.6.8.4. *Discussion*

- 1.6.8.4.1. *Larger infrastructures may have their own security system. We cannot specify what they would use.*
- 1.6.8.4.2. *Is this scalability feasible? Is computational infeasibility scalable also?*
- 1.6.8.4.3. *By framework we mean architecture, not implementation.*
- 1.6.8.4.4. *Leaving this off would not hinder the requirements document.*
- 1.6.8.4.5. *It would be easy to specify something that would not scale. We should pay attention to all environments we support.*
- 1.6.8.4.6. *Perhaps the enterprise is really the simplest as far as the MAC needs go.*

1.6.8.5. <i>Vote on motion – passes 26:0:8</i>
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1.6.9. Requirements Item

- 1.6.9.1. *Move to include item 3.7 in functional requirements*
3.7. Support for classes of service where acknowledgement is not mandatory.
 - 1.6.9.1.1. *Moved Amar*
 - 1.6.9.1.2. *Seconded Greg P*
- 1.6.9.2. *Discussion*
 - 1.6.9.2.1. *This is already supported*
- 1.6.9.3. *Motion to amend:*
- 1.6.9.4. *Move to include item 3.7 in functional requirements*
3.7. Support for classes of service where 802.11 MAC acknowledgement of unicast frames is not mandatory.
- 1.6.9.5. *Discussion*
 - 1.6.9.5.1. *This is a description of a solution. It shouldn't be a requirement. What is the driving requirement? This says you have to do something in a certain way. Against the motion*
- 1.6.9.6. *Vote on amendment – passes 20:1:4*
- 1.6.9.7. *Main Motion:*
- 1.6.9.8. *Move to include item 3.7 in functional requirements*
3.7. Support for classes of service where 802.11 MAC acknowledgement of unicast frames is not mandatory.
- 1.6.9.9. *Discussion on main motion*
 - 1.6.9.9.1. *This is one way, not the only way.*
 - 1.6.9.9.2. *This is not redundant based on the requirement of bounded delay.*
 - 1.6.9.9.3. *It is not meaningless, but not really necessary. Classes of service are not necessarily the only way to support un-acknowledged services.*
 - 1.6.9.9.4. *If we feel that a particular solution is so good we feel it is a requirement, then we have the right to do so.*
 - 1.6.9.9.5. *This could be considered one of the already accepted requirements of multiple classes of service.*

1.6.9.10. <i>Vote on main motion – fails 16:14:7.</i>

1.6.10. Requirements item**1.6.10.1. Motion to adopt 4.3.1 as a functional requirement.**

4.3.1. Security framework must protect network traffic from eavesdropping to a reasonable level compatible with the state of the art.

1.6.10.1.1. *Moved Michael*

1.6.10.1.2. *Second John*

1.6.10.1.3. *Discussion*

1.6.10.1.3.1. We have seen presentations of known security flaws in the existing standard. In favor of this motion

1.6.10.1.3.2. The reason this was included was to insure there is a mechanisms to allow new algorithms to be added.

1.6.10.1.3.3. The problem is there is no quantifiable requirement.

1.6.10.1.3.4. Problem with the phrase "state of the art". When? We want to be able to add new mechanisms and algorithms as the state of the art changes.

1.6.10.2. *Motion to amend:*

1.6.10.3. Motion to adopt 4.3.1 as a functional requirement

4.3.1. Security framework must protect network traffic from eavesdropping to a reasonable level.

1.6.10.3.1. *Moved Dave H*

1.6.10.3.2. *Seconded Jesse W*

1.6.10.3.3. *Discussion*

1.6.10.3.3.1. This takes a vague motion and makes it even worse.

1.6.10.3.4. *Vote on motion to amend – fails 4:6:16*

1.6.10.4. *Motion on the floor:*

1.6.10.5. Motion to adopt 4.3.1 as a functional requirement.

4.3.1. Security framework must protect network traffic from eavesdropping to a reasonable level compatible with the state of the art.

1.6.10.6. *Discussion*

1.6.10.6.1. *All we can consider is what is available at the time we are doing the work. By definition, that is state of the art. Supports this.*

1.6.10.7. *Vote on main motion – passes 18:3:12*

1.6.11. Requirements Item**1.6.11.1.**

4.5.1. Negotiation of authentication and privacy algorithms must be incorporated.

4.5.1.1. The following negotiations must be supported:

4.5.1.1.1. authentication algorithm

4.5.1.1.2. privacy algorithm

4.5.1.1.3. data integrity algorithm

4.5.1.1.4. key establishment algorithm

4.5.1.1.5. one way hash function for sub key derivation algorithm

- 4.5.1.1.6. key expiration
- 4.5.1.3. Inability to complete negotiations must be able to cause a failure to authenticate.

1.6.11.2. Discussion

- 1.6.11.2.1. *The intent is that the negotiation covers all the items if there is more than one choice.*

1.6.11.3. Move to adopt 4.5.1 as modified below:

4.5.1. Negotiation of authentication and privacy algorithms must be incorporated.

4.5.1.1. At least the following negotiations must be supported:

4.5.1.1.1. authentication algorithm

4.5.1.1.2. privacy algorithm

4.5.1.1.3. data integrity algorithm

4.5.1.1.4. key establishment algorithm

4.5.1.1.5. one way hash function for sub key derivation algorithm

4.5.1.1.6. key expiration

4.5.1.3. Inability to complete negotiations must be able to cause a failure to authenticate.

1.6.11.4. Discussion

- 1.6.11.4.1. *This doesn't say there must be a non-null option for each negotiation, just what the choices are.*

- 1.6.11.4.2. *In the interest of preserving flexibility, is it the intent for these to be atomic negotiations? There is not requirement either way.*

- 1.6.11.4.3. *There is a need for this mechanism to agree at least on these items. In favor.*

1.6.11.5. Vote – passes 19:4:10

1.6.12. Requirements Item

1.6.12.1. Motion to adopt the text of 4.5.2

4.5.2. A flexible mechanism for adding both authentication and privacy algorithms must be incorporated, so that the standard does not need to be revised to use new algorithms in the future.

1.6.12.1.1. *Moved Bob O*

1.6.12.1.2. *Seconded Michael F*

1.6.12.2. Discussion

- 1.6.12.2.1. *If we don't adopt this, what would be the mechanism?*

- 1.6.12.2.2. *It is unlikely we would use an algorithm that is not standardized, they already have ASN1 identifiers.*

- 1.6.12.2.3. *Having an algorithm number is fine, but what does it mean? Can I add a proprietary scheme? Yes.*

- 1.6.12.2.4. *The desire is for interoperability. The details must be disclosed in order to register it as a standard.*

1.6.12.3. Motion to amend:

1.6.12.4. Motion to adopt the text of 4.5.2

4.5.2. A flexible mechanism for adding interoperable security algorithms must be incorporated, so that the standard does not need to be revised to use new algorithms in the future.

- 1.6.12.4.1. *Moved Steve W*
- 1.6.12.4.2. *Seconded Michael F*
- 1.6.12.5. *Discussion on amendment*
 - 1.6.12.5.1. *The use of classified algorithms would be excluded. Opposed to this amendment.*
 - 1.6.12.5.2. *This does not preclude classified algorithms. It establishes the mechanism.*
 - 1.6.12.5.3. *Registry numbers are a particular solution, but not made mandatory by this requirement.*
 - 1.6.12.5.4. *Interoperable means implement-able by multiple vendors.*
 - 1.6.12.5.5. *Does adding this text preclude exportability? No.*
- 1.6.12.6. *Vote on motion to amend – passes 25:0:11*
- 1.6.12.7. *Main Motion:*
- 1.6.12.8. *Motion to adopt the text of 4.5.2*
4.5.2. A flexible mechanism for adding interoperable security algorithms must be incorporated, so that the standard does not need to be revised to use new algorithms in the future.
- 1.6.12.9. *Discussion*
 - 1.6.12.9.1. *This is like writing a blank check, because of efficiency of implementations. We are supposed to standardize something that would not operate in wildly different ways. 802.10 did this and failed.*
 - 1.6.12.9.2. *This allows the ability to reject an algorithm they don't like. 802.10 didn't apply where it was needed. Security is continually being improved, we don't want to go through a standards process to fix security holes.*
 - 1.6.12.9.3. *We will have a base set to fall back to. We can use this to try out other algorithms. The industry can rally around a registered number. In Favor.*
 - 1.6.12.9.4. *This allows non interoperable systems to be more readily built.*

1.6.12.10. <i>Vote on the main motion – passes with 30:6:5</i>
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1.6.13. **Items rejected by authors of document 231:**

- 1.4.1.3. *Support for direct STA to STA communication. (No)*
- 3.3.1.3.2.1. *Support for Class of Service three years in the future (No)*
- 3.3.2.3.2.2. *Support for QoS Streams and bursty data concurrently. (No)*
- 3.4.3.3. *Support for "toll quality" voice, audio, and video streaming. (No)*
- 3.6.3.5. *Support for interactive data streams. (No)*
- 4.2.5. *Security framework should make no assumption whether peer authentication is machine or user authentication, as different organizations will establish different policies regarding who or what is authenticated. (No)*
- 4.3.2.1. *Security framework must preserve the security characteristics of content streams. (No)*
- 4.3.2.2. *The security extensions must not build in support for application layer protections mechanisms, i.e.*

SDMI, CSS, or other application content protection systems.
(No)

4.5.3. Security framework must not compromise (i.e., break the security of) existing industry standard network user authentication methods and techniques used within the framework. (No)

4.5.4. Security framework must coexist with existing industry standard network user authentication methods and techniques (e.g., RADIUS-based authentication). (No: out of scope)

4.7.1. Security framework should cause minimal computational expense consistent with meeting other requirements. (No)

4.7.2. Security framework should use public and/or standard algorithms to the greatest extent possible. (No)

4.7.3. Security framework should minimize the number of mandatory cryptographic algorithms. (No)

1.6.13.1. Discussion

1.6.13.1.1.

1.6.13.2. *Motion: QoS mechanisms must not preclude the ability to achieve asynchronous data throughputs, where packet bandwidth is available, that is equivalent to a DCF only BSS*

1.6.13.2.1. *Moved Tom T*

1.6.13.2.2. *Seconded Anil S*

1.6.13.3. Discussion

1.6.13.3.1. *When we define QoS, we don't want to allow DCF to operate compatible. Doesn't want PCF to hog the bandwidth.*

1.6.13.3.2. *There may be validity for evaluation criteria, but it is a bad requirement. What does "packet bandwidth available" mean? Move to evaluation criteria Oppose requirement.*

1.6.13.4. *Call the Question (Keith/Michael) 24:6:6*

1.6.13.5. *Vote on motion – fails 12:22:4*

1.6.14. Requirements document output

1.6.14.1. *Jesse is the editor*

1.6.14.2. *Motion that the requirements that have been accepted are consolidated into a document by the editor and released as the TGe requirements document.*

1.6.14.2.1. *Moved Anil*

1.6.14.2.2. *Seconded Michael*

1.6.14.3. Discussion

1.6.14.3.1. *Does this preclude us from re-visiting the requirements document? We can change with 75%.*

1.6.14.4. *Vote on the motion – 34:1:0*

1.6.15. Final Discussion

1.6.15.1. *Goals of next meeting –*

1.6.15.1.1. *Continue the agenda we didn't complete.*

- 1.6.15.2. *Ad Hoc Groups will continue between meetings, with notice and minutes on the reflector.*
- 1.6.15.3. *Recommendations that the submissions be reviewed before the next meeting, in the hope there will be more consensus.*
- 1.6.15.4. *Is it permissible to have email balloting of the task group between meetings?*
 - 1.6.15.4.1. *Logistics and notification rules are a problem. It would be very difficult.*
 - 1.6.15.4.2. *Continuation of ad hoc groups will be very helpful.*
 - 1.6.15.4.3. *Straw polls are OK.*
- 1.6.15.5. *Call for minutes of teleconferences.*
- 1.6.15.6. *Harry needs all revisions of documents sent directly to him by email.*

1.7. Adjourn

802.11F IAPP RP
Meeting Agenda
(& Meeting Report)
July 2000

May 2000 802.11 F Agenda

- Administration Stuff
- Top level work plan & schedule
- Goal for Mtg
- Papers & discussion
- Adjournment

The Labor Pool...

- Chair: David Bagby
- Editor: Bob O'Hara
- Secretary:
 - Do we have a volunteer for this mtg?
 - Dave will take minutes too...
 - (for this mtg) – we are still looking for a permanent Secretary.

Admin stuff

- Approval of minutes from May
 - Moved: Gary Spiess
 - Second: David Halsz
 - Vote: approved w/o objection

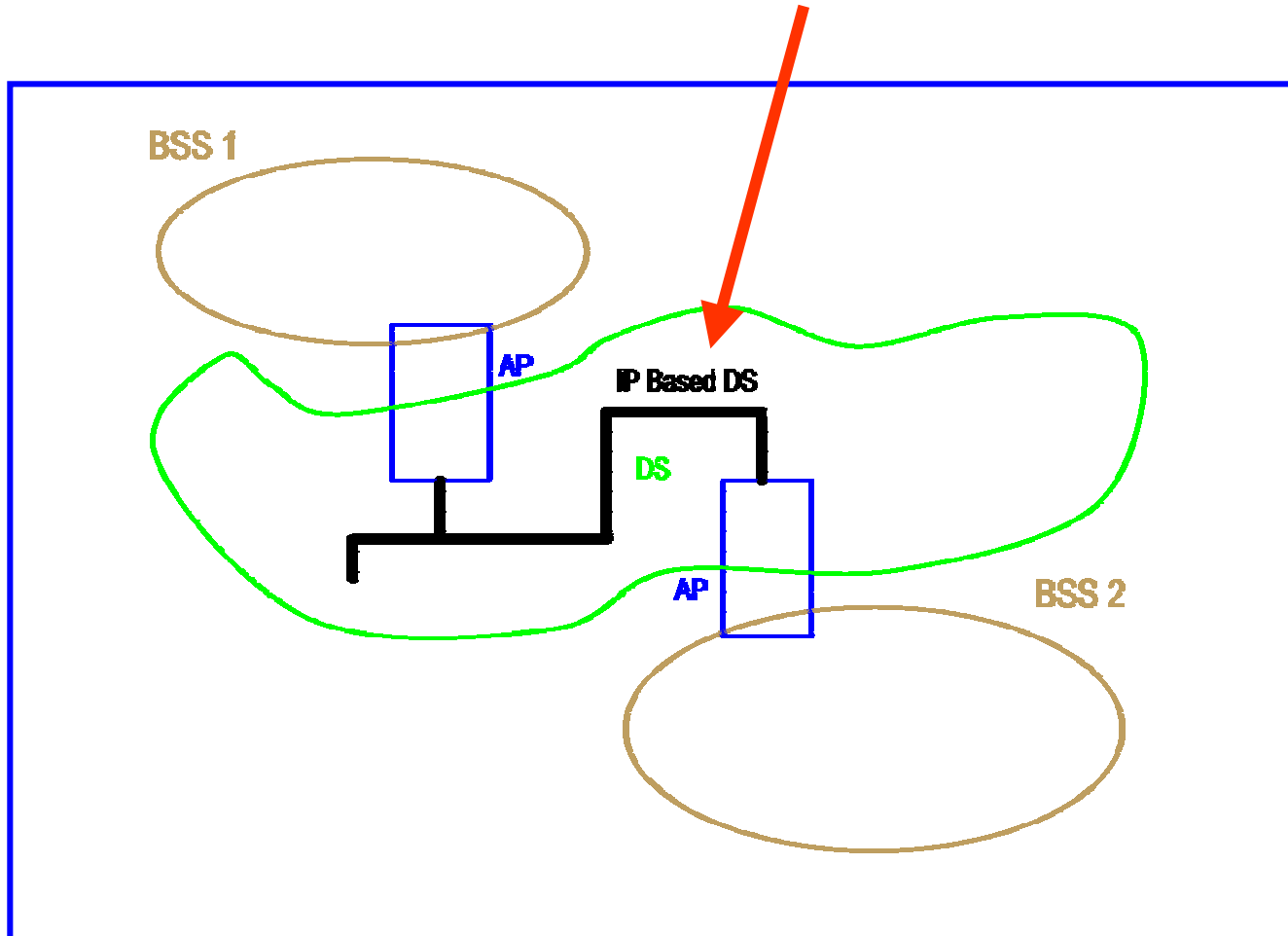
Previously Adopted Work Plan

- 1st proposal for IP DS per PAR
 - Other DS environments s in parallel / after depending on contributions volunteered
 - None proposed as of July 2000
- Create Draft RP to support 802.11-1999
 - Internal Ballot & then determine next actions
 - Sched depends on 802.11E progress
 - Two choices:
 - If 11E on track, update & ballot changes to support 11E
 - If 11F schedule mismatch, publish then update after 11E complete.

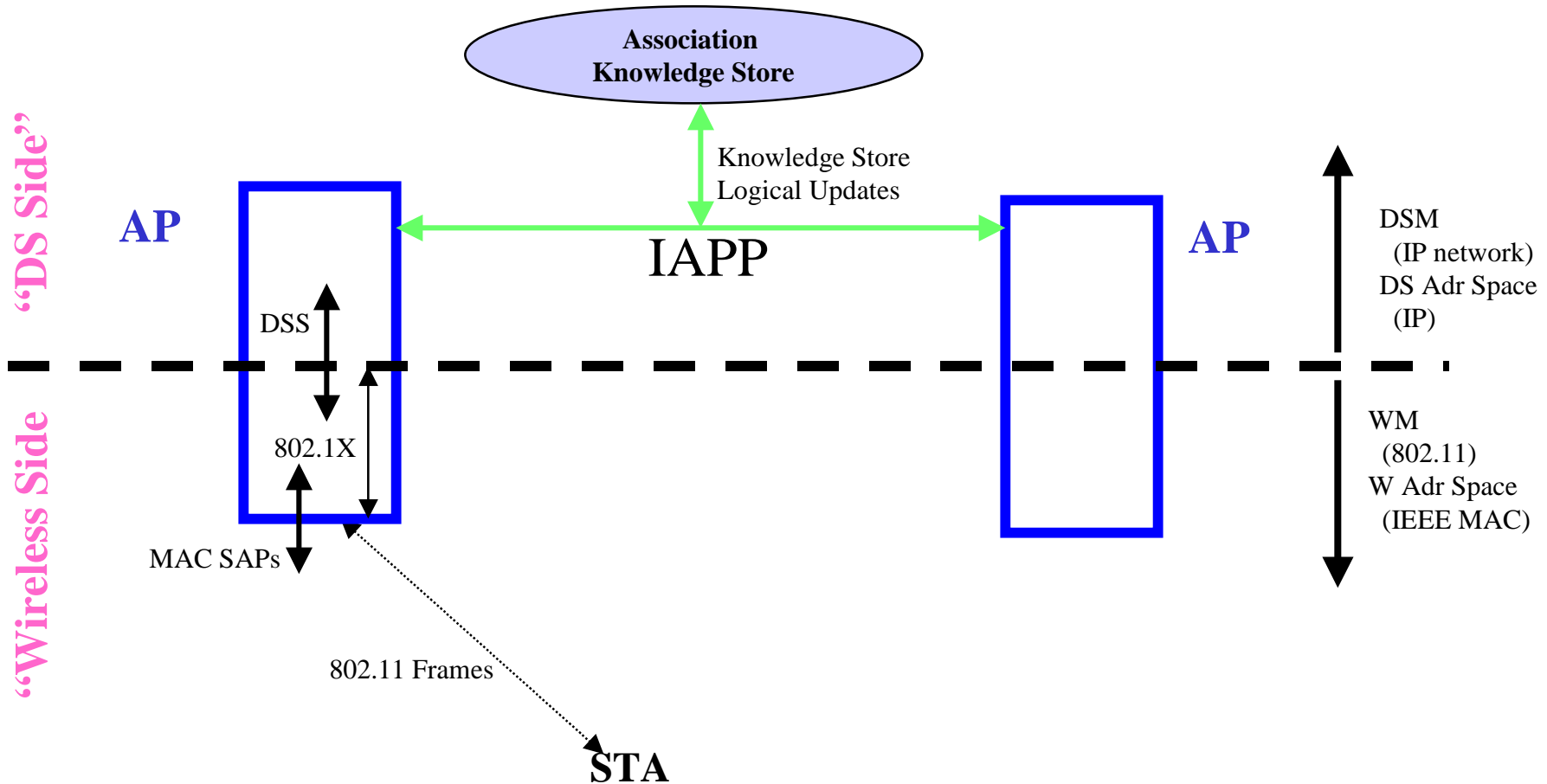
Previously Adopted 11F Schedule

- 1st TG mtg, IAPP history review, task framing – May 2000
- **Functional determination, proposals – July 2000**
- 1st Draft written, review starts – Sept 2000
 - Cut off for additional DS environment inclusion.
- First internal .11 ballot – Nov 2000
- Schedule fork issue decision – Jan 2001
 - Hold for 11E progress or start external ballots...?

The 802.11F Task...



IAPP & the 802.11 Architecture



July 2000 Papers

- 2000/159 IAPP service mappings Bob O'Hara
- 2000/160 proposed IAPP functional requirements Bob O'Hara
- 2000/?? Implementation Options for the Distribution System in the 802.11 Wireless LAN Infrastructure Network Amre El-Hoiydi

Papers Processed

- Paper 159 O'Hara
 - Presented & discussed

- Paper 160 O'Hara
 - Presented & discussed

- Much discussion resulted in votes that follow...

Functional requirements adoption votes:

- Note: these were considered Technical Votes since they set technical requirements for functionality. Therefore, these votes required 75% to pass.

FR adoption votes:

- Proposal to support min for .11 as published: Doc 2000/160
 - Incl Formation & maintenance of ESS (was author intent)
- Moved to adopt 160 as min FR for IAPP
 - (Ohara, Chris Z)
 - Vote: 7, 0, 2 passes

FR adoption votes:

- Above min: Load balancing
 - Moved: David Halasz, Ravi
 - Vote: 7,3,1 fails as not 75%

FR adoption votes:

- Above Min: IP/.11 address mappings to support DSS Dist service.
 - Moved: David H, Gary S
 - Vote: 7, 0, 3 passes

FR adoption votes:

- Above min: Auth/security support (pre-auth etc)
 - This is support for auth etc in 11 as published today (E stuff already committed last mtg).
 - Moved: Anil, Bob O
 - Vote: 8, 0, 0 passes

FR adoption votes:

- Above min: IAPP versions
 - Moved: Anil, Wen-Ping
 - Vote:7, 0, 2 passes

FR adoption votes:

- Above min: IAPP designed for “reasonably” secure operation
 - General IAPP rec practice issues
 - Moved: Chris Z, Bob O
 - Vote: 9, 0, 1 passes

FR adoption votes:

- Above Min: AP attributes
 - Moved : That we support the concept of an AP specific SNMP MIB.
 - moved: Chris Z, Wen-ping 2nd
 - Vote: 6, 0,4 passes

11F volunteers to do some work for 11E

- Moved: 11F moves to ask 11E to delegate to 11F the task of making some minimal changes to the formal definition of the MAC SAP(s) to support IAPP. These 802.11 changes will be given back to 11E & the 802.11 plenary for approval & hopefully adoption.
 - Moved: Gary S, Second Chris Z
 - Vote: 7, 0, 1 passes

Request for 11E to expedite security work

- Resolved: 802.11F requests that (after their functional requirements are completed - presumably during the July 2000 sessions) 802.11E expedite progress on the security enhancements portion of their PAR charter. 11F would like to be able to include impacts of 11E security enhancements in the first 11F IAPP internal ballot (scheduled for Nov 2000).
 - Moved: Chris Z
 - Second: Ravi
 - Vote: 4, 1, 2 passes

Goals/Milestones for Sept mtg

- Entertain IAPP proposals to meet functional requirements
- Cut off for additional DS environment contributions
- First Draft of IP IAPP draft written/selected for 11F review

Motion to Adjourn

- Unan.

**IEEE P802.11
Wireless LANs**

Minutes for High Rate 802.11b Study Group

Matthew B. Shoemake, Ph.D., Chairperson

Hyatt Regents, La Jolla, CA

Date: July 10-13, 2000

Author: Ron Provencio
Alantro Communications
ronp@alantro.com

Opening Session: Monday, July 10, 2000

Meeting called to order by Matthew Shoemake at 1545hrs

1.1 Review of Agenda for La Jolla Sessions Jul 10-14 (See Doc. 199)

1.1.1 Reviewed agenda with group for approval.

1.2 Additional agenda items for “Presentation of Submission” Section

1.2.1 Technical Feasibility of OFDM for HRbSG (Doc 203)

1.2.2 OFDM in the 2.4GHz Band (Doc. 188)

1.2.3 HRb performance Requirements – PHY Overhead Data Rate (Doc. 206)

1.2.4 Freq. Domain Modulators for 802.11b (Doc. 202)

1.3 Motion I: Accept agenda for HR Study Group La Jolla Jul 10-14 (Doc 199)

1.3.1 Dave Richards motion to accept

1.3.2 Jerry Loraine 2nd motion

1.3.3 Vote on Motion

a) For: 34

b) Opposed: 0

c) Abstain: 0

1.4 Motion II: Accept minutes from Seattle Meeting (Doc. 136)

1.4.1 Carl Andren motion to accept

1.4.2 There was not a 2nd to motion

1.4.3 Will give group opportunity to review (Doc. 136) & vote at later session

1.5 New Business

1.5.1 Ad-hoc group organized to draft a press release announcing the IEEE 802 committee approval of 802.11 “TGg”: Ron Provencio - Lead , Jerry Loraine, Carl Andren, Chris Heegard and review with Study Group

1.5.2 Drafting of Call for Proposals

1.5.2.1 Matthew reviewed draft of “Call for Letters of Intent to Propose”

1.5.3 Motion III: Accept the draft “ Call for Letters of Intent to Propose” (Doc. 198)

1.5.3.1 Chris Heegard motion to accept

1.5.3.2 Dave Richards 2nd motion

a) For: 37

b) Opposed: 0

c) Abstain: 0

1.5.3 Presentation of Submissions

- Mark Webster, Intersil: Frequency Domain Modulator (Doc. 202)

1.6 Adjourn

2. HRb Study Group Session: Tuesday, July 11, 2000

2.1 Opening

2.1.1 Meeting called to order Meeting called to order by Matthew Shoemake at 1300hrs

2.2 Old Business

2.2.1 Issues arising from PAR and 5 Criteria

2.2.2 Press Release

a) Draft has been completed. Ad-hoc group will review and present to Study Group on Wednesday July 12, 2000 meeting.

2.2.3 Presentation of Submissions

2.2.3.1 Jan Boer, Lucent Technologies, OFDM in the 2.4GHz Band (Doc. 188)

- Stated that existing radios would have to be modified to support the existing OFDM proposal

2.2.3.2 Mark Webster, Intersil: Technical Feasibility of OFDM for HRbSG (Doc 203)

- It was stated that Single Tone was already agree to as the path for 802.11b standard
- Proposal stated that both Single Tone and Multi-Tone be implemented

2.2.3.3 Jerry Loraine, Micro Linear: HRb performance Requirements – PHY Overhead Data Rate (Doc. 206)

2.3 Selection Process was presented by Matthew S. for review

2.3.3 Three documents will be created to describe the selection process

2.3.3.1 Doc. 209: Key Group Requirements of Selection Process

2.3.3.2 Doc. 210: Key Functional Requirements

2.3.3.3 Doc. 211: Comparison Criteria

2.4 Discussion of general group requirements

- i. Worked on “Key Group Requirements of Selection Process”
- ii. Worked on “Key Functional Requirements”

2.5 Adjourn

3. HRb Study Group Session: Wednesday, July 12, 2000

3.1 Opening

3.1.1 Meeting called to order by Matthew Shoemake at 0830hrs

3.2 Old Business

3.2.1 Issues arising from PAR and 5 Criteria

- i. No Issues from PAR and 5 Criteria

- 3.2.2 Press Release
 - 3.2.2.1 Press Release was reviewed and discussed with the group
 - 3.2.2.1.1 Motion: Accept Press Release
 - 3.2.2.1.2 Al Petrick motioned to accept
 - 3.2.2.1.3 Mark Webster 2nd motion
 - a) For: 37
 - b) Opposed: 0
 - c) Abstain: 6
- 3.3 **Discussion of Key Group Requirements of Selection Process (Doc. 209)**
 - 3.3.2 Mark Webster would like to have the ability to merge two proposals. Document will be rewritten to address the possibility of having two proposals merging.
 - 3.3.3 No vote was taken. Requirements of Selection Process will be put up for vote with TGg.
- 3.4 **Discussion of Key Functional Requirements (Doc. 210)**
- 3.5 **Adjourn**

4. HRb Study Group Session: Thursday, July 13, 2000

4.1 Opening

- 4.1.1 Meeting called to order by Matthew Shoemake at 0830hrs

4.2 Old Business

- 4.2.1 Issues arising from PAR and 5 Criteria
 - i. No issues, submitting to committee for approval
- 4.2.2 Selection Process
 - ii. No issues with document. Will be submitted to server as (Doc. 209r1)
- 4.2.3 Functional Requirements
 - 4.2.3.1 Items (2) was changed to have a clarification note related to MAC
 - 4.2.3.2 Item (5) will be moved to comparison criteria (Doc. 211). Discussion was that it was restricting, due to the fact that it will not be known if a proposal will meet regulatory requirements until a product is built.
 - 4.2.3.3 Item (7): Discussion was on the fact that the statement was to vague due to the wording.
- 4.2.4 Straw Pole: Should we strike as a functional requirement
 - 4.2.4.1 Vote: 22/9/2
 - 4.2.4.2 Comment was made to add a statement covering robustness
 - 4.2.4.3 Item (13) was added as a place holder.

4.3 New Business

- 4.3.2 Reviewed Comparison Criteria Matrix
 - 4.3.2.1 Additional Item: Discussion to have a liaison to the FCC. Matthew will discuss with Vic on details to leverage other efforts.
- 4.3.3 Conference Calls for: Selection Process, Functional Requirements and Comparison Matrix
 - 4.3.3.1 Discussion: It was decided that a conference call was a good idea to allow people to prepare proposals for the next meeting.
 - 4.3.3.2 19 members stated they would attend. Majority
 - 4.3.3.3 Meeting will be on July 26th . 8:00AM (PT) Maximum meeting time is 1 ½
- 4.3.4 Straw Pole: Meeting of July 26th
 - Vote: 13/3/0
- 4.3.5 Follow-on meeting held on: Aug 9, 23, Sept 6
- 4.3.6 **Motion:** To have conference call at 8:00AM (PT) maximum 1.5 hours for the purpose on working on documents: 209,210,211
 - 4.3.6.1 Jan Boer motioned to accept
 - 4.3.6.2 Jerry Loraine 2nd motion

- a) For: 27
- b) Opposed: 0
- c) Abstain: 0

4.3.7 Matthew S. will present conference calls to Plenary for approval

4.4 Adjourn

**IEEE P802.11
Wireless LANs**

Tentative Minutes of Regulatory ad-hoc meeting

Date: Tuesday July 11th 8.30am

Author: Juha Heiskala
Nokia
e-Mail: juha.heiskala@nokia.com

Peter Murray
NWN (Intersil)
e-mail: Peter.Murray@NWN.com

Participants

Vic Hayes	Lucent Technologies
Chaim Shemhav	nBand Communications
Masa Akahaue	Sony
Juha Heiskala	Nokia
Kevin M. Barry	S.I.T.A.
Dennis Eaton	Intersil
Marcus Gahler	NextComm
Steve Helford	Intersil
Bob Huang	Matsushita/Panasonic
Francois Kleitz	Alcatel
Reza Alavi	Analog
Peter Murray	Intersil
Denis Kuwahara	Boeing
Barry Davis	Intel
Jerry Loraine	Micro Linear
C C Tsien	Intel
Mark Webster	Intersil
David Landeta	Intersil
Carl Andren	Intersil
Tim Wakeley	Hewlett Packard
Jim Zyren	Intersil
David Skellern	Radiata
Andrew Gowans	UK RA
PJ Sallaway	National Semiconductor
Dave Richkas	Intel

Meeting called to order 8.30am.

Roll call.

Motion 1: To approve document 00/208 Tentative agenda for the Regulatory ad-hoc as agenda for the meeting.

Mover: Denis Kuwahara
Second: Peter Murray
Pass 6/0/0

There are 18 people in the meeting room.

UK Radio Communications Agency has first meeting on 27th July on planning for the 5GHz band, anyone can attend. Agenda will be made available. Contact: Andrew J Gowans, Radio Communications Agency, direct: +44 (0)20 7211 0309, mobile: +44 (0) 7776 161813, email: gowansa@ra.gtnet.gov.uk.
UK-RA website: www.radio.gov.uk
List of relevant ITU, CEPT and BRAN meetings.

CITEL is important to contribute to the ITU-R work.

Andrew Gowans will make a paper with a time scale and recommendation of how to contribute.

Jim Zyren report on FCC docket 99-231, Wide-Band Frequency hopping and DS testing.

Considering that preparatory work was on the list of group objectives, the group will start to work on a response to FCC on the DS jamming margin test. Jim Zyren and Jerry Loraine will draft a letter, available 4pm Tuesday.

Discussion on what the Gaussian interferer test means. Conclusion nobody really knows at this point.

Jim Zyren report on FCC docket 99-42 RF-Lighting devices in the 2.45GHz band.

The latest filing to FCC from Fusion Lighting will be made available and proposed response to be evoked in September meeting.

Back on WBFH, Jim Zyren discusses current FH rules.

Agenda item 4.

Presentation on RadioLAN parameters by Denis Kuwahara, document 00/150 JRG 8A-9B 13-June notes.

Presentation by Denis Kuwahara document 00/151 Working Party 7C-16-June-notes, that joint task group on earth exploration satellite and RLAN bands has been formed.

Agenda item 3, response to ETSI BRAN on DFS and TPC.

David Skellern will look into the papers and presentations by Mika Kasslin and draft a response.

Meeting adjourned 9.30am. July 11 2000

Regulatory ad-hoc July 12 2000 reconvene 08:30

Review of Tuesday meeting by Vic:

Revise Agenda

Motion to approve agenda:

Move: Ecclesine

Seconded: Caldwell

Vote: all approve:

1: Review draft comment letter 00/216 to FCC on ET Docket No. 99- 231 by Jim Zyren.

Edits done by members of the ad-hoc committee.

Motion :to approve letter: moved by Kawahara

Second: Zyren

Vote: all approve

3: David Skellern showed initial draft response to the ETSI Bran letter doc. 802.11-99/129 with suggestion on sending a partial answer promising more responses later.

4: Not discussed in this session.

5: Organise work for WRC2003

Dennis says that we should contact companies to make requests for spectrum needs known to ITU.

Andrew Gowans indicated that our requests should go via 8A 9B. He will provide information to assist in directing our requests to the correct committees. He will pass requests to the Rapporteur.

The 802.11 representative to 8A has to be designated.

Prepare a position paper to JRG 8a-9b to input into WP 7C on 802.11 WLAN parameters.

Motion to prepare:

Moved Murray

Second Ecclesine

Pass: all approve.

Motion: To nominate a Liasion officer from 802.11/15 to JRG 8A-9B Task 4 and to encourage participation by individuals supported by ITU-R sector member. (www.itu.int link to radio communications).

Moved Ecclesine

Second Murray

Pass: all approve.

6: Discussion on who and how membership is obtained and if there is a volunteer to be the 802.11 representatives.

A Gowans shows doc 000/??? on the new ITU make up. Gives info on the Study groups. Can be obtained from the WEB.

Also shows meeting schedules, and explains intricacies of membership and relationship between committees.

Meeting adjourned until 4 pm at 10:15

Wednesday July 12 2000

Informal preparation of the RLAN parameters paper

Thursday July 13 2000

Reconvene: 08:30

Vic brings up new documents he obtained referring to the ITU-R (IEEE 802.161-00/16).

2: The RLAN parameters to JRG 8a – 9b document work by Denis continues. It will be completed off line and then placed for review on the web site. Th plan will be to attend the revalent ITU-R meetings.

3: Response to ETSI re 00/129

David Skellern presents draft of Liaison response to ETSI Bran letter doc. 802.11-99/129.

Motion

Vic Hayes entertains a motion to recommend to 00/241 to the chair of ETSI Bran re: One standard.

Shown in May 2000 letter

Denis/Murray

Motion approved.

3/0/0

4. Liaison to ETSI-BRAN re one standard

5. Revision of ex-parte letter on 99-231

Motion on reconsideration of letter 00/216d2 to FCC.

Jim/Denis

Approved 3/0/0

Motion to modify wording 00/216d3.

Jim/Denis

Approved 3/0/0

Motion to approve document 00/216d3.

Jim/Denis
Approved 3/0/0

6. Mode of operation with ITU-R (resolution 9)

We reviewed the resolution. Vic will enquire whether we need to make an MOU with ITU-R.

Meeting closed at 11:15