

**IEEE P802.11
Wireless LANs**

Tentative Minutes of the IEEE P802.11 Full Working Group

May 8 – 11, 2000

Madison Renaissance Hotel, Seattle, WA

Opening Session: Monday, May 8, 2000

Meeting called to order by Stuart Kerry at 0830 hrs. Agenda of 61st session of 802.11 is in doc.: IEEE P802.11-00/076.

Objectives for this meeting:

- Process TGd recirculation ballot results
- Prepare draft 802.11d for submittal to Sponsor Ballot if required
- Report on progress of 802.11b-cor1 compilations, public notice to web
- Continue work on 802.11e MAC enhancements
- Start the work on 802.11f IAPP call for papers
- Study Group on HRB SG

1.1. Review of Agenda

MAY 8-12, 2000 - SEATTLE, WA, USA							
INTERIM	MONDAY	TUESDAY		WEDNESDAY	THURSDAY		FRIDAY
0830-1000	802.11 Full WG	Adhoc Regulatory	TGd	HRb SG	Adhoc Regulatory	TGd	
1000-1030	Break						
1030-1200	HRb SG	Adhoc Regulatory Adhoc Marketing	TGe	TGe	TGe	HRb SG	
1200-1300	Break						
1300-1500	HRb SG	TGf	TGe	80.11/802.15 WGs & 802.16 H SG Joint Meeting	TGe	HRb SG	
1500-1530	Break						
1530-1700	HRb SG	TGd	TGd	80.11/802.15 WGs & 802.16 H SG Joint Meeting	802.11 Full WG		
1700-1830	Break						
1830-2000	HR SG (Optional)	Adhoc Joint 11/15 & 16 Human SG	TGe (Optional)	Social Evening (1900-2200)			
2000-2130							
2130-0000							

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 50 people in the room introduced themselves.

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. **Logistics**

- (a) Coordinator – Donna Ferguson
- (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:
 - 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 available a meeting session before the agenda item is presented.

1.7. **IEEE Patent Policy**

Stuart Kerry, 802.11 Chair explained the IEEE Patent Policy as per Clause 5 of the IEEE Standards Board Bylaws and per Clause 6.3 of the IEEE Standards Operations Manual. 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.

1.8. Individual Representation

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

1.9. 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.

1.10. 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.

1.11. Other Announcements

- 1.11.1. Joint Wireless Working group events.
 - 1.11.1.1. Attempting to co-locate interim meetings between .11, .15, .16.
 - 1.11.1.2. Lectures and press
 - 1.11.1.3. Co-existence and interoperability Joint SGs and TGs
 - 1.11.1.4. 802.11 Marketing
 - 1.11.1.5. Joint sponsorship
 - 1.11.1.6. Straw Poll – is it a good idea to co-locate 43 yes, 2 no, 7 don't care.
- 1.11.2. Field trip to Microsoft executive briefing center
 - 1.11.2.1. Very Large installation, Field trip Tuesday evening.
 - 1.11.2.2. Sign up sheet to be circulated.
 - 1.11.2.3. Straw Poll – Number of Rental cars – 25.

1.12. Quorum Check

- 1.12.1. 28 voting members present, we need 37 for a quorum.

1.13. Approval of Minutes from Albuquerque

- 1.13.1. Deferred until next meeting of plenary due to lack of Quorum.

1.14. Reports

- 1.14.1. Review of ExCom meeting
 - 1.14.1.1. 802.11b-cor1 will be published on web site, and included in subsequent printings
- 1.14.2. TGd re-circulation ballots – Al Petrick
 - 1.14.2.1. Letter Ballot 21. Opened on March 27, and closed on April 4th.
 - 1.14.2.2. To submit 802.11d/D1.6 to Sponsor Ballot
 - 1.14.2.3. Return ratio 53%.
 - 1.14.2.4. 33 approved without comment, 2 with comments
 - 1.14.2.5. 3 disapproved with comments
 - 1.14.2.6. Approval ratio 92%.
 - 1.14.2.7. Abstention ratio 2%.
 - 1.14.2.8. Vic – request to have input from IEEE editor (Jennifer) included in 802.11d. Vic will make contact.
- 1.14.3. Regulatory Ombudsman – Vic Hayes
 - 1.14.3.1. Executive Committee has a new function started in March, Ombudsman Regulatory Matters.
 - 1.14.3.2. First tasks – make policy and procedures for contacts to the external world. Coordination is required between 3 wireless groups in LMSC.
 - 1.14.3.3. Document 2000/79.

1.15. Review of Contributions

- 1.15.1. Harry Worstell
- 1.15.2. A number of documents have been received and are being processed.
- 1.15.3. Al Petrick requests 4 documents.
- 1.15.4. Up to document 81 right now.
- 1.15.5. Steven Gray – requests several document numbers for TGe

1.16. Unfinished Business Agenda

- 1.16.1. TGd
- 1.16.2. Regulatory

- 1.16.3. TGb-cor1
- 1.16.4. TGe
- 1.16.5. TGf

1.17. New Business Agenda

- 1.17.1. Web Site interaction and use
 - 1.17.1.1. Documentation to be web based. Harry Worstell – Previously documents were issued in bulk ZIP files for meetings. We will continue bulk ZIP, but also we will have web based links to PDF versions of documents.
 - 1.17.1.2. Web site to be updated by end of week
- 1.17.2. Straw Poll on Office 2000
- 1.17.3. Ad Hoc Marketing Group

1.18. Adoption of Agenda

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| 1.18.1. | Motion to adopt agenda 00/76 as presented (Motion ID 201) |
| 1.18.2. | Moved David Skellern |
| 1.18.3. | Seconded Vic Hayes |
| 1.18.4. | Discussion |

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| 1.18.4.1. | What about lack of quorum? We are empowered by a vote of the last Plenary. |
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| 1.18.5. | Vote : 23 / 0 / 0 |
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1.19. Agenda for this week, chairs of SubGroups:

- 1.19.1. TGd – Bob O'Hara.
 - 1.19.1.1. Will be resolving comments. Regulatory elements and determination of hopping patterns. Updates of draft, and further balloting.
- 1.19.2. Regulations – Vic Hayes.
 - 1.19.2.1. Report on regulatory matters, document 2000/80.
 - 1.19.2.2. Issues – WBFH FCC 99-231. WECA submitted a proposal
 - 1.19.2.2.1. Max 4MHz wide non overlapping channels, Max TX power 60mW how rate for WBFH 2.5 to 100Hz. There must be at least 20 channels, and receiver sensitivity test.
 - 1.19.2.2.2. Rebuttal from Proxim, many visits to FCC, WECA still talking to CUBE.
 - 1.19.2.3. UK-RA 5GHz consultation. Letter filed, straw man proposal, document 2000/67. Conference to hear all parties – 802.11 was invited. Conference is June 2nd.
 - 1.19.2.3.1. Request for participation in small group (Ad Hoc Regulatory)
- 1.19.3. TGb-cor1 Vic
- 1.19.4. TGe
 - 1.19.4.1. Presentation of papers, review of requirements, establishment of evaluation criteria
- 1.19.5. TGf
 - 1.19.5.1. Starting work. One paper to be presented.
- 1.19.6. High Rate SG
 - 1.19.6.1. To work on PAR to extend 802.11b to greater than 20Mbps.

1.20. New Business

- 1.20.1. Web Site Interaction and improvements
 - 1.20.1.1. Web pages for each Task Group and Study Group.

- 1.20.1.2. Updates by end of meeting week.
 - 1.20.1.3. Harry, Don, and Stuart to form small working group for Web Site updates.
 - 1.20.1.4.
 - 1.20.2. Microsoft Office Poll – Office 97 : 22 users, Office 2000 : 28 users.
 - 1.20.3. Ad Hoc Marketing Group
 - 1.20.3.1. Al Petrick. 802.11 Ad Hoc marketing group formed at last plenary.
 - 1.20.3.2. Objective – to generate a common marketing WG story for the WLAN industry.
 - 1.20.3.3. Marketing Collateral – 802.15 marketing templates
 - 1.20.3.4. Liaisons – WECA, WLANA, 802.16, ETSI WPAN
 - 1.20.3.5. First session today at 10:30AM.
 - 1.20.3.6. Straw Poll – number of attendees approx 4.
 - 1.20.4. 802.11 Rules and Regulations Statements, Ad Hoc.
 - 1.20.4.1. Vic Hayes volunteers to head this effort.
 - 1.20.5. Server and Internet access
 - 1.20.5.1. IP address 192.168.2.2. Wireless connectivity. Ravi, Bob O, and Stuart have cards.
 - 1.20.6. Introduction to Wireless Human. This evening Ad Hoc Joint 11/15/16.
 - 1.20.6.1. High Speed Unlicensed Metropolitan Area Network
 - 1.20.6.2. 802.16 SG at Albuquerque
 - 1.20.6.3. First effort for wireless MAN = focusing on UNII for outdoor.
 - 1.20.6.4. Air interface for MAN. Use elements of 802.11.
 - 1.20.6.5. Desire liaison with 802.11 and .15
 - 1.20.6.6. Scope of Wireless HUMAN.
 - 1.20.6.7. Straw poll if interest level for evening session – 28 people
 - 1.20.7. No Further New Business
- 1.21. Adjourn for Subgroups.**

2. Joint Session of 802.11, 802.15, and 802.16: May 10th, 2000

2.1. Opening

- 2.1.1. The meeting was called to order by Stuart Kerry at 13:10
- 2.1.2. Show of hands of new participants – 23.
- 2.1.3. Show of hands of 802.11 voting members – 36.
- 2.1.4. Show of hands of 802.15 voting members – 23.

2.2. Roll Call

2.3. Approval of the agenda

2.3.1. 802.11 Motion to approve the agenda: Motion ID 202

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| <ul style="list-style-type: none"> 2.3.1.1. Moved Harry Worstell 2.3.1.2. Second Andre Martin 2.3.1.3. No discussion 2.3.1.4. Vote: 35:1:0 |
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2.3.2. 802.15 Motion to approve the agenda
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| 2.3.2.1. Passed by unanimous consent |
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2.4. Announcements

2.4.1. Social Event

- 2.4.1.1. Tillicum Village

2.4.2. Joint Wireless Working Group Events

- 2.4.2.1. 802.11, 802.15, 802.16
 - 2.4.2.1.1. Co-Located Interim sessions
 - 2.4.2.1.2. Co-Existence and interoperability
 - 2.4.2.1.3. Marketing, Lectures, and Press
 - 2.4.2.1.4. Chairs of the 3 working groups are all in favor of this.
 - 2.4.2.1.5. Starting in January 2001, 802.1, 802.11, and 802.15, and 802.16 will be in an alliance and co-located.
 - 2.4.2.1.6. Straw Poll – does the group endorse this general direction of an alliance of wireless groups? 94:0:2

2.4.3. Review of the 802.15 hosted venue choices

- 2.4.3.1. September 2000
 - 2.4.3.1.1. Scottsdale, AZ, Hosted by Motorola
 - 2.4.3.1.2. Radisson Resort and Spa, Scottsdale, room rate \$139.
 - 2.4.3.1.3. Information on the web site.
- 2.4.3.2. January 2001
 - 2.4.3.2.1. Two Volunteer locations
 - 2.4.3.2.2. Straw Poll: Salt Lake City (39) vs. Orlando (50).
 - 2.4.3.2.3. 802.16 planning to go to Israel. Straw Poll (22)
 - 2.4.3.2.4. Another option – San Francisco Bay Area (42)

2.4.4. Wireless LAN for meeting room

- 2.4.4.1. Nortel, Cabletron, and phones from Spectralink

2.5. Old Business

2.5.1. 802.11 TGd report – Bob O'Hara

- 2.5.1.1. Comment resolution on letter ballot 21
- 2.5.1.2. All comments resolved, draft updated
- 2.5.1.3. Work is finished, so Thursday AM Session is available.

2.5.2. 802.11 TGe report – John Faketselis

- 2.5.2.1. Entertaining papers, about 12 papers have been presented so far.
- 2.5.2.2. Ad Hoc meeting on finalizing requirements and evaluation criteria
- 2.5.2.3. TGe will take Thursday 8:30AM time slot given up by TGd.
- 2.5.2.4. TGe has scheduled an Ad Hoc session today at 15:30. TGe request this time to be formally given to TGe for Ad Hoc Activities.

2.5.2.4.1.	802.11 Motion to allocate the 3:30 to 5:00PM time slot to TGe for Ad Hoc activities
2.5.2.4.2.	Motion ID 203
2.5.2.4.3.	Moved Bob Heile
2.5.2.4.4.	Seconded Dennis Kuahara
2.5.2.4.5.	No Discussion
2.5.2.4.6.	Vote: 28:0:1

2.5.3. 802.11 TGf report – Dave Bagby

- 2.5.3.1. Group started this week
- 2.5.3.2. Two papers
- 2.5.3.3. Work plan and schedule adopted.

2.5.4. 802.11 High Rate B Study Group Report – Matthew Shoemake

- 2.5.4.1. First meeting this week
- 2.5.4.2. Nine papers presented
- 2.5.4.3. Work has been done on writing Draft PAR and Five Criteria.
- 2.5.4.4. Remaining issues on interoperability and coexistence.
- 2.5.4.5. Potential for acceptance of PAR and Five Criteria this week.

2.5.5. Regulatory Ad-Hoc Report – Vic Hayes

- 2.5.5.1. Meetings on Monday and Tuesday
- 2.5.5.2. Discussed ITU-R input (doc 085)
- 2.5.5.3. Discussed UK-RA consultation

2.5.5.3.1.	802.11 Motion– To approve the presentation of 00/106 Draft 1 in principle, accept comments and complete the document in the ad-hoc Reg group meeting of Thursday morning to get final approval at the closing plenary meetings of .11 and .15
2.5.5.3.2.	Motion ID 204
2.5.5.3.3.	Moved Vic Hayes
2.5.5.3.4.	Seconded Dennis Kuahara
2.5.5.3.5.	No discussion
2.5.5.3.6.	Vote: Passes 21:0:3

2.5.5.3.7.

2.5.5.3.8.	802.15 Motion – To approve the presentation of 00/106 Draft 1 in principle, accept comments and complete the document in the ad-hoc Reg group meeting of Thursday morning to get final approval at the closing plenary meetings of .11 and .15
2.5.5.3.9.	Moved Vic Hayes
2.5.5.3.10.	Seconded Dave Eckard
2.5.5.3.11.	No Discussion
2.5.5.3.12.	Vote: Passes 19:0:5

2.5.5.4. Discussed Wideband Frequency Hopping

- 2.5.5.4.1. FCC Docket 99-231
- 2.5.5.4.2. Status of proceedings 00/105
- 2.5.5.4.3. Document is on the server, Bruce Kreamer will present at 802.15

2.5.5.5. Discussed Future Work

- 2.5.5.5.1. Bundle work of the three 802 working groups, making a joint group to work with regulatory matters.

2.5.5.5.2. Working groups will work out means to insure voting credit for attendance in regulatory group.

2.5.6. Agenda Adjustments

2.5.6.1. Chair - Any objection to change the second slot of this joint meeting into an 802.11 TGe Session?

2.5.6.2. No objection, so moved unanimously.

2.5.7. 802.15 TG2 report – Steve Shellhammer

2.5.7.1. Coexistence Task Group

2.5.7.2. Deliverables – coexistence model , coexistence mechanisms.

2.5.7.3. Results to be documented as an IEEE recommended practice.

2.5.7.4. Task Group is requesting input from academic researchers for input into solving this problem.

2.5.8. 802.15 TG3 report – Jim Allen

2.5.8.1. High Rate Task Group

2.5.8.2. 802.15 document 00/143

2.5.8.3. PAR approved in March

2.5.8.4. Weekly meetings to work on call for applications and requirements documents

2.5.8.5. Call for Proposals for 21 days. (document 99/164r4)

2.6. ***New Business***

2.6.1. The Universal Radio WLAN forum Presentation

2.6.1.1. Presented by Tom Seip, TI

2.6.1.2. 1st International Wireless LAN Forum (10 May 2000)

2.6.1.3. Document will be 802.15 00/112

2.6.2. 802.16 Wireless HUMAN study group report

2.6.2.1. Unlicensed Metropolitan Network

2.6.2.2. Document 802.11 00/121

2.6.3. Joint Liaisons

2.6.3.1. Tom Seip – we need to grant access to drafts in process. This right should be extended to editors.

2.6.3.2. 802.11 will allow public access to drafts by July.

2.6.3.3. This will cover the issue in the interim.

2.6.3.4. Working groups will cover in tomorrow's Plenary sessions.

2.6.4. Meeting Network

2.6.4.1. Currently companies and individuals are supporting this.

2.6.4.2. We would like to have a ready to go box that we can use at these meetings. Hosts of meetings would ship between meetings.

2.6.4.3. Straw Poll of level of support within group. 63:1:1

2.7. ***Adjourn***

3. 802.11 Closing Plenary Session, May 11th, 2000

3.1. Call to Order

3.1.1. The session was called to order by Stuart Kerry at 3:45PM

3.2. Announcements

3.2.1. Please return Wireless LAN cards

3.2.2. Quorum check – 25 members, not a quorum.

3.3. Roll Call

3.3.1. 47 people were in the room.

3.4. Other meetings

3.4.1. January 2001 Interim options in Orlando, FL

3.4.1.1. Peabody Hotel, International Drive

3.4.1.2. Disney Resorts – Swan and Dolphin

3.4.1.3. Other locations are already full. Current rates for these are \$225, but we will try to negotiate down.

3.4.2. Intel offers San Diego or Hillsboro OR for Interim meetings

3.4.2.1. To be discussed off line

3.5. Document List Update

3.5.1. Are there any announcements of papers for next time.

3.5.2. Some documents had a number assigned, but were not presented.

3.6. Agenda Adjustments

3.6.1. None

3.7. Reports from Sub Groups

3.7.1. TGd – Bob O’Hara

3.7.1.1. Report in document 098.

3.7.1.2. Draft document in Drafts folder on Venus

3.7.1.3. Motion – to adopt 802.11d/D1.8 and forward to the 802.11WG for a default recirculation ballot
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3.7.1.3.1. Motion ID 206

3.7.1.3.2. Moved Bob O’Hara

3.7.1.3.3. No Discussion

3.7.1.3.4. Vote: Unanimous Consent without objection
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3.7.1.4. It was noted that the header of Draft 1.8 says Draft 1.7. It will be fixed. The current draft will be changed to Draft 1.9.

3.7.1.5. Motion – to adopt 802.11d/D1.9 and forward to the 802.11WG for a default recirculation ballot
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3.7.1.5.1. Motion ID 207

3.7.1.5.2. Moved Bob O’Hara

3.7.1.5.3. No Discussion

3.7.1.5.4. Vote: Unanimous Consent without objection
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3.7.1.6. Motion to reconsider motion 206
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3.7.1.6.1. Motion ID 208

3.7.1.6.2. Moved Bob O’Hara

3.7.1.6.3. Seconded John Kowalski

3.7.1.6.4. Discussion

3.7.1.6.4.1. This is to prevent sending out the (incorrect) draft 1.8 to letter ballot
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3.7.1.6.5. Vote: Passes 17:0:2

3.7.1.7. Reconsideration of Motion – to adopt 802.11d/D1.8 and forward to the 802.11WG for a default recirculation ballot

3.7.1.7.1. Motion ID 206
 3.7.1.7.2. Moved Bob O'Hara
 3.7.1.7.3. Call the question
 3.7.1.7.4. Vote: Motion defeated 0:15:2

3.7.1.8. Next Meeting Objectives - Work for next meeting will be to resolve any comments for the letter ballot just approved, and if successful, send the draft out to Sponsor Ballot. Receive a paper on Japanese regulations and international roaming.

3.7.1.8.1. Does TGd have a sponsor group? The chair has not completed that, but it will be completed in time for the Sponsor Ballot. A letter and invitation to ballot has to be prepared and sent one month in advance.

3.7.2. Ad-Hoc Regulatory – Vic Hayes

3.7.2.1. Report in Document 124

3.7.2.2. Move to empower Vic Hayes to make graphical enhancements to the document with file name 0106Draft38, to add the voting results of 802.11 and 802.15, submit the paper to the UK-RA, repair the heading and make the presentation on June 2, 2000.

3.7.2.2.1. Motion ID 209
 3.7.2.2.2. Moved Vic Hayes
 3.7.2.2.3. No discussion
 3.7.2.2.4. Void Count
 3.7.2.2.5. Discussion

3.7.2.2.5.1. Amend motion to reflect specific file name, which will be edited.

3.7.2.2.6. Vote: Motion Passes 17:0:1

3.7.2.3. Move to empower the 802.11 chair to send a letter to the Chair of ETSI-BRAN reporting that the requested responses can not be generated for the June 27-30, 2000 meeting because the ETSI-BRAN letter was sent to arrive on the last day of the meeting. The chair is requested to copy the incoming and outgoing letter to the SEC and to the secretary of the IEEE Standards Board.

3.7.2.3.1. Motion ID 210
 3.7.2.3.2. Moved Vic Hayes
 3.7.2.3.3. Seconded Harry Worstell
 3.7.2.3.4. Discussion

3.7.2.3.4.1. The late arrival of the letter was verbally confirmed with the chair of ETSI-BRAN

3.7.2.3.5. Vote: Motion passes 17:0:2

3.7.2.4. Objectives for next meeting

3.7.2.4.1. To prepare letters for liaison organizations and other bodies as the need arises. At the July meeting we may generate letters to go out to the outside world. The response to ETSI should be TGa, but TGa is not in session. Moved to Regulatory Ad Hoc. Send a response to ETSI-BRAN regarding Document 129.

3.7.3. TGb-cor1

3.7.3.1. Move for the IEEE 802.11 chair to obtain the report from 802.11b-cor-1 chair and post on the web including the changes to the document.

3.7.3.1.1. Motion ID 211
 3.7.3.1.2. Moved Al Petrick
 3.7.3.1.3. Second John Faketselis
 3.7.3.1.4. No Discussion

3.7.3.1.5.	Vote: 17:0:0
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3.7.4. TGe – John Faketselis

3.7.4.1. Report in document 135

3.7.4.2. Scheduled Teleconferences – May 24, June 8, June 22.

3.7.4.3. Objectives for next meeting

3.7.4.3.1. Define functional requirements for TGe.

3.7.4.3.2. Define evaluation / testability

3.7.4.3.3. More technical papers and proposals.

3.7.4.4. Discussion

3.7.4.4.1. Have we developed a liaison with IEEE 1363 for public key cryptography. Chair of TGe will send email to chair of IEEE 1363

3.7.4.5. Motion – that the chair of TGe establish a liaison with IEEE P1363 before the next plenary session.
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3.7.4.5.1.	Motion ID 212
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3.7.4.5.2.	Moved Bob O'Hara
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3.7.4.5.3.	Second John Kowalski
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3.7.4.5.4.	Discussion
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3.7.4.5.4.1.	Is there anyone with experience who would take this liaison? None?
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3.7.4.5.4.2.	Vote: Motion Passes 21:0:0
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3.7.5. TGf – Bob O'Hara for Dave Bagby

3.7.5.1. Report in document 94

3.7.5.2. Objective for next meeting

3.7.5.2.1. Finalize functional requirements for IAPP.

3.7.6. High Rate Study Group – Matthew Shoemake

3.7.6.1. Report in document 131

3.7.6.2. Motion to change "TBD" in document 00/115r2 to "63", i.e. the number of companies attending the May 2000 IEEE 802.11 meeting, resulting in document number 00/115r3.

3.7.6.2.1.	Motion ID 213
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3.7.6.2.2.	Moved Matthew Shoemake
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3.7.6.2.3.	Second Harry Worstell
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3.7.6.2.4.	Discussion
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3.7.6.2.4.1.	Reading of motion
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3.7.6.2.5.	Vote: Motion Passes 19:0:0
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3.7.6.3. Move to accept the PAR and Five Criteria, documents 00/114r2 and 00/115r3 respectively, and forward the PAR and 5 Criteria to the IEEE 802 Executive Committee for approval.

3.7.6.3.1.	Motion ID 214
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3.7.6.3.2.	Moved Matthew Shoemake
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3.7.6.3.3.	Seconded Carl Andren
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3.7.6.3.4.	Discussion
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3.7.6.3.4.1.	Explanation of the documents
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3.7.6.3.5.	Vote: Motion Passes 14:0:1
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3.7.6.4. Move to empower the HRBSG to continue work through the period of the July Plenary.

3.7.6.4.1.	Motion ID 215
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3.7.6.4.2.	Moved Peter Eccelsine
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3.7.6.4.3.	Seconded Harry Worstell
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3.7.6.4.4.	No Discussion
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3.7.6.4.5.	Vote: Motion Passes 17:0:0
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3.7.6.5. Objective for next meeting

3.7.6.5.1. Continue functional and performance requirements.

3.7.7. Ad Hoc Marketing Group – Al Petrick

3.7.7.1. Report in document 083

3.7.7.2. Al Petrick and Bob Heile will be representing 802.11 and 802.15 at the International Wireless Packaging Consortium.

3.7.7.3. Electronics Design Communications workshop.

3.7.7.4. Communication Design Magazine – looking for writers from the group.

3.7.7.4.1. Straw Poll – does anyone want to volunteer to write? None

3.7.7.5. Issue a press release on the 99-231 NPRM. We need to empower the marketing group to put out a press release.

3.7.7.6. Motion - to empower the vice chair of IEEE 802.11 to draft a press release in response to the NPRM, post the letter on the reflector, host a teleconference call with an ad-hoc group along with the IEEE 802 chair and SEC for approval, and release to the media to print.

3.7.7.6.1. Motion ID 216

3.7.7.6.2. Moved Al Petrick

3.7.7.6.3. Second Bob O'Hara

3.7.7.6.4. Discussion

3.7.7.6.4.1. None

3.7.7.6.5. Vote: Motion Passes 9:0:1

3.7.7.7. Objectives for the next meeting

3.7.7.7.1. Establish joint meetings with 802.11/15 at the July 00 Plenary and continue review of materials.

3.7.7.7.2. Generate collateral material for the 802.11 web site.

3.7.7.7.3. Draft Press Release on NPRM

3.7.7.8.

3.7.8. 802.11 Rules and Statements Ad Hoc

3.7.8.1. No progress at this meeting.

3.7.8.2. Draft will be made available on the web site on the members only section.

3.8. Unfinished Business**3.8.1. Output Documents**

3.8.1.1. 00/106-Draft-3 Response to the UK-RA

3.8.1.2. Move to reconsider motion 209
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3.8.1.2.1. Motion ID 217

3.8.1.2.2. Moved Vic Hayes

3.8.1.2.3. Seconded Harry Worstell

3.8.1.2.4. No Discussion

3.8.1.2.5. Vote: Motion Passes 18:0:0

3.8.1.3. <i>Move to empower Vic Hayes to make graphical enhancements to the document with file name 0106Draft38, to add the voting results of 802.11 and 802.15, submit the paper to the UK-RA, repair the heading and make the presentation on June 2, 2000.</i>

3.8.1.3.1. Motion ID 209

3.8.1.3.2. Moved Vic Hayes

3.8.1.4. Move to replace draft 38 with 28 (because the document with draft 28 contains in fact draft 3)

3.8.1.4.1. Motion ID 218

3.8.1.4.2. Moved Bob O'Hara

3.8.1.4.3. Seconded Vic Hayes

- | | |
|------------|----------------------------|
| 3.8.1.4.4. | Discussion |
| 3.8.1.4.5. | Vote: Motion Passes 17:0:1 |

3.8.1.5.	Move to empower Vic Hayes to make graphical enhancements to the document with file name 0106Draft28, to add the voting results of 802.11 and 802.15, submit the paper to the UK-RA, repair the heading and make the presentation on June 2, 2000.
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| 3.8.1.5.1. | Motion ID 219 – this motion replaces Motion 209 |
| 3.8.1.5.2. | Moved Vic Hayes |
| 3.8.1.5.3. | No discussion |
| 3.8.1.5.4. | Vote: 13:0:1 |

3.8.1.6.	Move to permit two editorial changes to document 00/106Draft 3 (file name 0106Draft28R). Slide 9: bullet 2, change “if” into “as” and change “have” into “are”. Slide 16: replace bullet 3 by bullet 2 of slide 9.
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| 3.8.1.6.1. | Motion ID 220 |
| 3.8.1.6.2. | Moved Vic Hayes |
| 3.8.1.6.3. | Seconded Peter Ecclesine |
| 3.8.1.6.4. | No Discussion |
| 3.8.1.6.5. | Motion accepted by unanimous consent without objection. |

3.8.2. Future Meeting Schedule

3.8.3. Other Interim Meetings

3.8.3.1. January 2001 under discussion.

3.8.4. Next Meeting

3.8.4.1. Objectives review

3.8.4.2. Agenda Preview

3.9. New Business

3.9.1. Creation of New Study Group

3.9.1.1. Tim Wakeley – Looking for support for creating a study group for a recommended practices PAR for the development of 802.11 commodity components.

3.9.1.2. Discussion

3.9.1.2.1. What can we do to the standard to do this. Traditionally, the standard does not speak to implementation. What sort of result to you foresee? Some people suggested a recommended practices PAR for interfaces between parts or components of an 802.11 system.

3.9.1.2.2. Do you foresee the result to be the definition of something similar to the MII or the AUI? At this point that is possible, but is open to the outcome.

3.9.1.2.3. In the past we had hours of discussion between MAC and PHY. Now that products exist it will be harder to achieve. Speaks against this proposal.

3.9.1.2.4. He didn't say interface standard – he said wanted a recommended practice.

3.9.1.2.5. The results will be better if there a number of system vendors.

3.9.1.3. Suggestion to post information to 802.11 reflector for discussion

3.10. Adjourn

Attendance list for the meeting held at **Renaissance Madison Hotel, Seattle, WA**

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Friday, May 12, 2000

Page 1 of 4

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Friday, May 12, 2000

Page 2 of 4

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*Friday, May 12, 2000**Page 3 of 4*

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Tentative meeting schedule

Date	Place	Hotel	Type	Host
May 8-12, 2000	Seattle, WA	Renaissance Madison Hotel	Interim	Boeing
July 10-14, 2000	La Jolla (San Diego), CA	Hyatt Regency	Plenary	
September 18-22, 2000	Scottsdale, AZ	Radisson Resort and Spa	Interim	Motorola
November 6-10, 2000	Tampa, FL	Hyatt Regency	Plenary	
January, 2000	?	?	Interim	
March 12-16, 2001	Hilton Head, SC	Hyatt Regency	Plenary	
July 9-13, 2000	Portland, OR	Portland Marriott	Plenary	
November 12-16, 2001	Austin, TX	Hyatt Regency Town Lake	Plenary	
March 11-15, 2002	?	?	Plenary	
July 8-12, 2002	Vancouver, BC	Hyatt Regency	Plenary	
November 11-15, 2002	Koloa, HI	Hyatt Regency Kauai	Plenary	

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

Date:

May 9, 2000

Author:

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Minutes of TGd at the 802.11 Meetings in Seattle, WA

Session on May 8th, 2000

Appointment of Secretary – Tim Godfrey
Call to order 15:30

Approval of Agenda

Moved – Tim Godfrey
Second – Bob O’Hara
Vote passes 2:0:0

Approval of the Minutes from Albuquerque.
No matters arising from the minutes

Approval of the minutes
Moved Tim Godfrey
Seconded Bob O’Hara
Vote: Passes 2:0:0

Announcements.

A submission will be presented a a later session regarding international roaming

Unfinished Business from Last Meeting

None

Proposed Action for this meeting

Work through comments and address them in the order they appear.
Submit updated draft for default WG recirculation ballot (since it is probable that technical changes will be made)

Schedule

8 May 15:30 – 17:00
9 May 8:30 – 10:00
9 May 15:30 – 17:00
11 May 08:30 – 10:00

Resolution of comments on letter ballot 21
24 comments, 10 Technical.

- Comment 1 – accepted
- Comment 2 – accepted
- Comment 3 – Technical, delete “Regulatory Information” element. Accepted.
- Comment 4 – Accepted, “May be” is added to note for Order 3.
- Comment 5 – Accepted.
- Comment 6 – Accepted.
- Comment 7 – Technical, element not needed in probe response. Accepted.
- Comment 8 – Accepted.
- Comment 9 – Accepted
- Comment 10 – Accepted.
- Comment 11 – Accepted.
- Comment 12 – Accepted, same as before.
- Comment 13 – Can’t find cited text
- Comment 14 – Can’t find cited text
- Comment 15 – Accepted, description of Pad added.
- Comment 16 – Accepted, the comment was deleted as redundant.
- Comment 17 – Accepted.
- Comment 18 – Accepted
- Comment 19 – Accepted
- Comment 20 – Accepted (in part)
- Comment 21 - Accepted with a resolution other than what was suggested
- Comment 22 – Accepted (apparently already fixed)
- Comment 23 – Accepted (already done)
- Comment 24 – Accepted (already done)

Adjourned at 17:00

AM Session on May 9th, 2000

Session not called to order due to lack of participation

PM Session on May 9th, 2000

Call to order at 15:30

All comments have been resolved.

Agenda for this afternoon

Review new draft – 802.11d D1.7 has been distributed on server.

Review and discussion of comment resolutions

Propose a motion to send out a default recirculation ballot at the working group level.

Comments on process and agenda?

No comments or objections.

Review of all changes made to draft.

An editing error was found. The output draft will now be called D1.8

No further discussion on changes

Motion to adopt draft 1.8 and forward to Working Group for a default recirculation ballot Moved Denis Kuahara Seconded Peter Ecclesine Discussion
Explanation of default recirculation ballot. What is the time length of the ballot? To be decided at the WG.
Vote: Motion passes 11: 0: 2

New Business

Presentation on Japanese Regulations and Roaming.

Author not available to present paper.

No Other New Business.

Adjourn at 16:15

**IEEE P802.11
Wireless LANs**

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

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

May 8 – 11, 2000

Madison Renaissance Hotel, Seattle, WA

Tuesday AM

Appointment of Secretary

Tim Godfrey

Session called to order at 10:30 by chair, John Faketselis.

Proposed Agenda

Policies overview for TG

Schedule Overview, SG history

Call for Papers

Presentation of Papers

Requirements definition, Requirements document update.

Evaluation Criteria review.

Schedule review

New Business

Next Meeting Agenda

Presentation to WG Plenary

Adoption of Agenda

Without objections

Policies Overview

Show of hands – first time participants: approximately 25.

Voting rights for Task Groups
Debates, rights of members
Key Motions (Roberts Rules)

Schedule Overview

We are planning to have a draft by November 2000.
Review of PAR, TG Charter. Purpose and Scope.

Call for Papers

Document 65, Extensible Security, Bob O'Hara
Document 66, QoS Questions, Bob O'Hara
Documents 107, Beacon Collisions in 802.11 WLAN
Document 108, Protecting QoS Enabled BSSes
Document 109 Acknowledgement ACK transmission problem
Document 110, QoS support in 802.11 contention free MAC, Sunghyun Choi.
Document 70, Multimedia Synchronization and 802.11 MAC enhancements.
John Kowalski
Document 100, MAC enhancements, Witold
Document 063 Hierarchical structure to enhance WLAN security, Yutaku.
Document 112, Need to standardize MAC-PHY interface, Tim Wakely
Document 61, Polling Based PCF for strong QOS guarantees. Jim
Document 087, Proposed enhancements for 802.11 security. Steven Gray
Document 088, A brief summary of codec tests, Steven Gray
Document 089, Frame sorting for PCF, Steven Gray
Document 96, HiperLan type II DLC, Gunnar
Document ?? Suggested 802.11 PCF management of CF bursts, Maarten Hoeben
Document 71, 802.11 MAC enhancements joint proposal, Wim Diepstraten
Document ?? QoS Mechanisms, Amar Ghori.

Call for objections to this set of papers from voters

No Objections

Scheduling of Papers

Time allocated to all papers totals 460 minutes, 7 2/3 hours.
Everyone was granted all the time they asked for.
Who is not ready to present?

Document 63
Document 71
Document ?? Maarten
Document 87, 88, 89

Papers will be grouped by subject.

Security Papers
QoS
Other

Presentation of Papers

Document 65a, Extensible Security, Bob O'Hara et al.

Discussion

The assumption is that security is software not hardware to support an open ended standard. Is that what we really want?

Would vendor A and Vendor B's equipment be able to communicate if they chose disjoint options? True

By authentication do you mean data authentication or user authentication

Do you see this covering authentication, privacy, or both? Both – preference is to have independent fields for to describe each.

Document 087, Proposed enhancements for 802.11 security. Steven Gray

Authors not present

Follow up information to be presented in July

Discussion

Cautions against the use of a global identifier scheme. This has been tried and has failed in other standards.

the issue is mobility within a corporation. The difference is between authenticating machines and authenticating people.

Document 100, MAC enhancements, Witold

Discussion

The use of PIFS would not interoperate with existing PCF. Correct

It the bandwidth utilization of 30% normalized? Isn't that very low efficiency?

For even premium service, DCF should be used? This achieves all requirements? Isochronous traffic? Premium is still to be defined

Were there any results for delay and jitter arrival? Not yet.

Do you intend to define what streams map to the three levels of service? No answer yet.

Why do you think backbone services are applicable to endpoint services?

Document 088, A brief summary of codec tests, Steven Gray

Discussion

What is the 20mS frame size? The bits resulting from encoding 20mS of input data.

What is the end to end latency? It includes everything.

What is the budget for the WLAN component of the total delay? We need to be better than that max, but beyond that it is open.

Is the wireless link budget 60mS of the 180 mS total? (excluding the coding delay). There is not a lot of queuing delay in IS95.

Repetition rate is 20mS? Yes. Wireless to wireless would double that? Yes. 180mS is perceptible to users? Yes.

Tuesday Afternoon Session

Session called to order at 13:40

Presentation of Papers, Contd.

*Document 70, Multimedia Synchronization and 802.11 MAC enhancements.
John Kowalski*

Sidebar – discussion of need for TGe to TGf liaison.

It was felt that a separate function is not required since the same people are in both groups. Issue will be revisited if there are communication problems between groups.

Schedule update – Wednesday AM session times changed to 10:15 to 12:15 to accommodate 2 hour presentation.**Presentation of Papers, cont**

Document 66, QoS Questions, Bob O'Hara

What is QoS? What are we standardizing? How do we evaluate proposals?

Discussion

Why do you say we couldn't come up with a definition of QoS? Said we hadn't.

A set of QoS parameters and a service interface were proposed in March. We will have more detail this time.

A presentation was made of QoS requirements yesterday by the same company as your co-authors. How does your perspective vary from theirs? Some believe that nothing is needed to be done. Others believe that there are more stringent requirements.

Regarding the comment of no apparent demand for QoS. There is a lot of application demand for the general class considered QoS. Is it just a lack of definition of the term QoS? Agree that things are happening on LANs, but plain Ethernet isn't having a problem. Nobody is needing Iso-Ethernet.

This group has no formal adopted requirements? Do you want to make these questions into formal requirements? I don't want to force the group to go in a particular direction just because there are questions. We should answer the question, though.

We have time allocated to revisit the requirements document.

There may be no perceived need for QoS in enterprise LAN, but there is a definite need for home QoS.

Considering that 802.11 networks are also connected to wired networks, what is the gain to coming up with a complex QoS scheme for wireless? That's the 64K question. Doesn't see the need given an internet environment with 802.1P

Schedule Update

Chair announces formation of an ad-hoc requirements committee for this evening.

Presentation of Papers, Contd.

Documents 107, Beacon Collisions in 802.11 WLAN

Document 108, Protecting QoS Enabled BSSes

Document 109 Acknowledgement ACK transmission problem

Document 110, QoS support in 802.11 contention free MAC, Sunghyun Choi.

Discussion

On Slide 14, do you intend to use station to station in a PCF? In the CP station to station frames are not allowed. Acknowledged

The ACK issue – If you don't send the ACK it is a lost frame for sure, if you do send it, it might not cause a collision. Agreed.

In regards to CFP you show that the AP would continue to transmit even if others were transmitting? It was the intent that all transmissions are “listen before talk?”

The fact that an AP might have a longer interference range than communication range, you can't count on synchronization by inter-communication. Also, IT departments don't want to have inter AP communications.

Document 112, Need to standardize MAC-PHY interface, Tim Wakeley, HP Agilent

Discussion

Did you have anything in mind? Specific signals and timing? Any part of the standard that can be digital would allow connection.

There is a historical precedent. The digital to analog interface is not static for example.

This committee uses an SDL description to put control and data into the same path. There may be different implementations.

Announcement of Ad Hoc Group at 20:30

Straw poll for participation: approx 18

Requirements and evaluation criteria

Those with proposals must participate.

Adjourn

Tuesday Evening Ad-Hoc Requirements Group

Review of Document 008r3 “MAC Enhancements Draft Requirements”

Discussion

Request for a matrix of comparison for authentication performance.

Suggestion to gather input from 802.16.

Suggestion that measurement of parameters and performance is better than simulation as a means of evaluation. What is the mix of PHY speeds that this MAC will be supporting?

On the baseline document, everyone would like more definition of what we are trying to do. Is there a specific place (format wise) to capture what we are trying to do? A place to incorporate the missing requirements.

What is not here is real-life usage scenarios. Actually there is a performance test matrix with scenarios

We need more specific parameters to the performance scenarios. They have to be exactly specified, but not make it too difficult to execute comparisons.

We need to consider the most demanding scenarios. We need to consider other marketplaces.

On the other hand, we have a choice. We can try to cover the majority of the requirements, or leaving it too open.

We should look at simplifying. Just say “provide a way to minimize jitter, delay, etc”

It was said that PHYs are advancing, so just on that basis, throwing bandwidth at the problem helps. On the other hand, we have cases where the

bandwidth needs are extreme. Hopefully solving the problem at 11Mbps, will scale to higher speeds.

The load on the network and the bandwidth requirements also increase over time. We don't need to worry about the "fringe" cases.

We need to narrow the problem down to what we can control. We take an existing MAC (that we already have) and improve it to carry these services. Lets narrow it down to that scope.

Suggestion to normalize to a "reference PHY" with a particular set of parameters: preamble length, bit rate,

Some MACs may not scale, so perhaps more than one Reference PHY would be needed.

We don't want to try and solve every difficult problem that might be there or show up in the future. We need to make a good foundation.

Assume a 10 and 50 Mbps PHY – that ought to be enough.

Action Item. The performance test matrix only covers QoS but not authentication or security. We need to expand the matrix.

The current MAC doesn't know what type of data is coming to it.

The MAC needs to handle layer 2, and higher layers handle classification and end-to-end.

Currently broadcast and multicast traffic is not as reliable as unicast. Perhaps we should address that?

To simplify the number of simulations, we need a model for speech, audio, video, etc. Fix those models to simplify the structure.

What is QoS? How do we specify that?

Draft definition – QoS is defined in terms of packet loss rate, the jitter, and the delay.

Perhaps QoS could be defined in terms of priority levels, with a performance for each.

Does the co-located BSS issue devolve to an interference level issue? No, there are possible means to maintain QoS in this exact case, so it is a MAC issue.

We should differentiate between interference resulting in a loss of bandwidth and interference causing a loss of QoS.

Are the authentication, privacy, and other proposals orthogonal to the QoS proposals? How do we account for potential interactions?

Perhaps a column in the performance matrix for Security? What about multiple proposals? Something needs to be added to the parameters for simulation?

The roaming issue is also critical. A long handoff will have QoS issues.

Proposal for a single test for Multiple BSS operation, a single test for roaming performance, a test for authentication performance. Let's introduce specific scenarios for these special cases, but not multiply the matrix dimensions for all different test axes.

Has this document been approved and adopted by the task group? It hasn't been moved this week, so no.

Proposal to change loss to milliseconds rather than packet error rate.

Straw poll – 12:1

Edited in Document 8 rev 4.

Do we need to consider the probability of network access? No, it is outside the MAC.

Re-addressing the question of milliseconds of loss versus packet error rate. Reverse previous change.

Keith Action Item – Define the Roaming Test.

Sudjyen to do security test.

Need specific definition of test scenarios.

We need to be careful in mixing Security and QoS.

Steve / Jesse – action item to provide metrics on the strength of security proposals.

If there is a requirement to support DVD or DSS security and encryption, we should mention that. Is that part of this work?

Any other suggestions for improvement of requirements document?

There should be some latitude given to what is learned in early simulations. We will have to modify our direction as we go along.

Topic for discussion – Models of 802.11 MAC, and commonality of tools.

Op Net?

A milestone for the next meeting would be the building of the simulation environment, supporting the existing MAC in that framework.

Proposal for a dedicated reflector for email?

Recommendation to poll the power line networking standards group to gather some scenarios they used for evaluation.

Wednesday AM

Session called to order at 10:15

Review of agenda

Ad Hoc requirements group at 1:00

Results presented to TG tomorrow.

Working on exactly how the testing will be performed, with an emphasis on simulation environments.

Presentation of Papers

Document 71, 802.11 MAC enhancements joint proposal, Wim Diepstraten

Presentation in sections, with questions between.

Section 1 – introduction and overview: Q&A

Please elaborate on the function of the repeater function? Will be addressed in last slide

Section 2 – Stream Service Interfaces: Q&A

Is the classification service within the MAC? The classification is done above the MAC

Why not put the knowledge in the station to make reservation, so the AP or PC doesn't need to know? The PC doesn't need to be involved, it just indicates that bandwidth is available.

How do you predict what bandwidth is available in a variable bit rate system? The channel status message from the MAC to SBM indicates the current available bandwidth. Do you try to separate a single bad station if others are OK? The EPC controls all BW control. The STA's follow the EPC instructions. Do you handle authentication for station to station? Whatever is in the standard.

On the data service primitives, what is the priority field? The priority field in the data interface are tied to VSID, which references a set of QoS parameters within the MAC.

Does the status indication from the MAC with bandwidth used include bursty or non QoS traffic? Yes.

Based on the list of QoS parameters- have you considered how this system will managed? We have not identified the MIB related management entities.

The goal is to be compatible with the 802.11 MAC and architecture? How does the bridge portal map to the 802.11 architecture? Explained until the last slide.

How can FEC be handled in the MAC? How is it supported? (take off line)

How did you take into account the mapping of INTSERV into 802.1d? The priority mappings are done in the CLSE in the link layer? Proposed mechanisms are in that draft. We are trying to put the necessary functions and interface in the MAC to use these higher layer standards.

In the current 802.11 architecture, the AP is transparent to traffic? How does the world know that the EAP is between the station and other entity? The SBM inserts its own address in the PATH message so it can intercept the return message.

Section 3 – Channel Access Method

(No time for questions)

Section 4 – BSS Overlap Provisions

Section 5 – Connectivity Model

Adjourn

Wednesday Afternoon

Review of current state of Requirements document 00/8r3

Overview of Security performance requirements

Document 119, Steve Williams

Absolute Requirements

Must be able to prevent unauthorized authentication or reauthentication with an AP

Must be able to prevent unauthorized access

Must protect network traffic from eavesdropping

Must allow for the authentication of the source of each packet

Must allow for mutual authentication of STA and AP

Security framework must not compromise existing standard security methods

Must coexist with existing authentication techniques EG Radius.

Mechanisms must fit within authentication and reauthentication time budget. Quickly enough for multimedia roaming.

Must strongly protect keys and passwords from eavesdropping.

Security framework must scale from unmanaged (home) to managed enterprise networks.

Multi algorithm proposals must support negotiation

Relative requirements

Security should cause minimal computational expense.

Should use public algorithms.

Should minimize the number of mandatory algorithms.

Should make no assumption of machine or user authentication.

Questions

How do we absorb these presentations into the requirement document? We will discuss these presentations, and insert into the requirements document as appropriate. This is a dynamic document, and will be continued to be updated.

There needs to be a motion to adopt these requirements in a formal motion.

There is a suggestion to take the input from this group, generate a document, and approve them as a requirements document for the Task Group.

It seems that the process and procedure is predetermined, yet the process has not been outlined and approved by the task group. The group should determine the process.

How do you quantify these requirements? The overhead of security will detract from bandwidth. We better we can reduce the overhead the better the solution is.

For example a public key authentication takes 40 million instructions

Let's find something computationally cheaper that is still adequate.

The relative requirements don't necessarily have to have quantitative criteria, since they are "supplemental".

RADIUS is a back end protocol, and has nothing to do with WLAN MAC authentication, how does it apply? The concept is to co-exist – we don't want to force anyone to undo or duplicate security structures to add wireless.

Is there any objection for this presentation to become part of the requirements? Yes, the implication is that we are extending the existing requirements. You first have to get formally accepted requirements. The purpose of this group is to prepare a basis for the TG to authorize. We are just starting the process.

What is the issue with the existing requirements?

Motion – That task group 802.11E complete the following steps in order:

- 1. Adopt the questions raised in paper 00/66 and 00/119 as a minimal set of questions that must be quantifiable answered; further 802.11e shall formally adopt 802.11e positions with respect to these question before 11e proposal evaluation requirements may be defined.*
- 2. The results of step 1 shall be used to define the 11e functional requirements.*
- 3. Once enhancement functional requirements are adopted, proposals for MAC enhancement shall only be considered that directly address one or more of the functional requirements as defined by step 2.*

Moved David Bagby.

Motion to amend the motion: to include reference to document 00/008

Moved Kevin Green

Second Greg Parks

Discussion:

The purpose of papers 66 and 119 are quite different than paper 008. The former are regarding things that are missing in the requirements themselves. Speaks against the motion to amend.

Against the motion – the amount of testing called for in document 8 is impossible. It must be simplified.

Motion to amend the motion to amend: Accept document 8, minus the performance test matrix as a starting point:

Moved Peter E

Seconded Harry Worstell

Amendment Withdrawn

Point of Order: Bob O'Hara - The original motion to amend changes the purpose of the original motion, which is not allowed.

Paper 119 presents requirements, so it is in the same category. Chair rules against the point of order.

Call for appeal against chair's ruling.

Moved Bob O'Hara.

Seconded Stuart Kerry.

Discussion of appeal

As the author of the original motion, the intent was to start with 66 and 119. Agrees that adding 8r3 changes the intent.

Kevin Green proposes removing the amendment in order to help the process move ahead.

Call the Question on the appeal.

Moved Matt Shoemake

Seconded Kevin

Vote: 17: 0 : 5

Show of hands – how many support the Point of Order and Appeal that paper 8 does not belong as part of the motion

Vote 11:4:8

Return to original motion:

- Motion – That task group 802.11E complete the following steps in order:*
- 1. Adopt the questions raised in paper 00/66 and 00/119 as a minimal set of questions that must be quantifiably answered; further, 802.11e shall formally adopt 802.11e positions with respect to these questions before 11e proposal evaluation requirements may be defined.*
 - 2. The results of step 1 shall be used to define the 11e functional requirements.*
 - 3. Once enhancement functional requirements are adopted, proposals for MAC enhancement shall only be considered that directly address one or more of the functional requirements as defined by step 2.*

Motion to divide the motion

Moved Matt Shoemake

Motion to divide is withdrawn

Discussion on the motion

Will this motion generate a set of documents as requirements? No, these papers generate a set of questions the group has to answer. Then the group has to generate requirements. Document 66 was questions, document 119 was requirements. The authors intention was to answer the questions before doing the requirement.

A concern was raised regarding process. The TG was not a participant in developing the process. This motion proposes a process we can chose to adopt.

Concern with sentence 2. The results of step 1 are not the exclusive inputs for requirements, but simply should be included in the requirements.

Call the Question

Moved Duncan Kitchen

Seconded Kevin

No Objection – the question is called.

Vote on the motion: Passes 12: 5: 9

Discussion

The first step is to answer the questions:

What is the definition of QoS.

The functional requirements in document 8 define these answers.

Show of hands – who wants to keep working for next ½ hour. (2) How many want to adjourn (25)

Any Objection to adjourn? None

Adjourn

Thursday AM Session

Call to order at 08:30

Agenda Review

Presentation of Papers

Document 063 Hierarchical structure to enhance WLAN security, Yutaku Kuchiki.

Discussion

In an enterprise environment, how would you account for a lost or stolen NIC (MAC address). KPS cannot detect hardware that is stolen. User Authentication is still needed.

This is only a device authentication, so users cannot move from one machine to another? Is the key permanent, or can the key change? Once the private ID is set, the generated key is constant. The key will be generated in each link. The key will be generated at the authentication, and disposed at the deauthentication. The generated key is unique between any pair, but is constant for a given pair.

Document 61, Polling Based PCF for strong QOS guarantees. Jim Mollenauer.

Discussion

How does this system work if the nodes are not fully connected? What if a STA cannot hear the preceding STA in the polling list? These are not 100% guaranteed solutions. Lot of things help, and are better than nothing at all.

In the overlap BSS case, what happens if the BSS's are not part of the same network? IE a strip mall? There is no solution – if you don't cooperate, you fight. The point is that there could be no coordination possible between BSS's. What if they can't hear each other? They must share their polling lists and cooperate.

The techniques are similar to the Byzantine general's problem in similar. Have you looked at the literature on this problem? Do you have any heuristics on who is going to be the coordinator? The simplest is by MAC address. What if two STA's who can't hear each other both decide to be coordinator? It's a complicated problem.

Question on slide 17 – in your implementation, what was the actual error rate seen, and thus what was the efficiency gain? The simulations that were done were under good conditions, so the error rate was very small. They were not recorded. Under optimal conditions, superpoll is not needed.

Have you considered any mechanism for multiple streams from a single station? This has not been dealt with explicitly. A hierarchical addressing structure could be developed.

Question on slide 20 – what sort of additional overhead would stations incur in this scheme? Suppose you have stations that can only contact the AP? What is the additional cost of appending all the polls? The polls are small relative to the PPDU.

Question on slide 20 – how do you handle the reservation request, or get on the polling list? It hasn't been put into the proposal. Relaying would be needed.

How can one point coordinator know the QoS parameter of stations that belong to another coordinator? By sending registration list from one AP to another.

Is there a mechanism to put high priority traffic early on the polling list, or to get on the polling list again? One could use a More Bit.

Questions on Paper 71 (Document 71, 802.11 MAC enhancements joint proposal, Wim Diepstraten)

Regarding the use of timestamps in the protocol – when you use timestamps, you open yourself to certain types of attacks, so we need to examine this. The source of time is a shared resource. Does this protocol run over a secured link, or outside a secured link? We are transparent to any security extension. It assumes an approach along the lines of the current WEP mechanism to encrypt the data. Are the bits you put in the protocol protected? The header is unencrypted.

The overlap BSS proposal suggests the superframe length be constant. Is that a requirement? It is a requirement for overlapping BSS support. Wouldn't that limit power save options? Will there be a proposal on optimal superframe lengths? If you want to provide QoS with voice and video, the Superframe will be in the range of 20 – 50 mS, due to the requirements. Within that range, overlapping BSS's need to agree. Information is exchanged in the proxy beacons. The size is chosen to be optimal, and is dynamically chosen by the QBSS with the oldest TSF timer.

The timestamps are an extension of the current 802.11 mechanism. We use the same mechanism for synchronization between BSS's.

Don't you think this proposal is over engineered and too complex to implement? The basic extensions to the PCF do not add that much complexity. The overlap BSS provisions do add complexity, but it is the only known way to manage the overlap case. The mechanism is elegant in the sense that it is distributed, and also can have varying levels of implementation.

Document 113 Suggested 802.11 PCF management of CF bursts, Maarten Hoeben

Discussion

How does this enhancement address the latency issues? The latency issues are already handled by upper layers by assigning priorities. The MAC needs to schedule according to those priorities. The AP is just an extension of a switched network. Private channels with a certain percent of the bandwidth can be supported.

Do you control QoS only with priorities, with no bandwidth reservation? There is a separation already defined by IETF and 802.1d. Priorities are easy to handle, they are sufficient if you don't oversubscribe.

On sheet 11, the PCF can poll for update with null frames. Why not use CF-Poll? In this proposal, if you don't have the station queue status, you can just send a null frame with an ACK with a Duration which contains queue information. A CF-Poll allows the station to send data.

802.11 when applied to a home network poses limits of the AP location. What about contention free station to station communication? Our focus has been on corporate networks. We have not addressed this yet, but it does not exclude it. Something like virtual side stream could be developed.

Latencies and priorities are done at a higher level, but can they be separated from the channel access mechanism when multiple streams are accessing the channel at the same time? They contend to form a CFB, there is no contention in a CFB. How is the arbitration resolved for CFBs? Same as DCF rules.

Providing hooks for IETF services in the MAC is not the same as duplicating them. There should be enough hooks standardized so that support is possible.

The CFB slide shows the NAV being set to cover a number of CFBs. Why not just set it for the single CFB? To preserve legacy compatibility. The beacon contains CFdurationremaining to cover the entire CF period, to exclude any legacy station for that time.

Does the poll to each station specify anything about what must be sent? No, the station decides. What if something comes along with a higher priority? Can the station change what it's going to send? The station does its own micro-scheduling of what it's going to send.

Regarding the placement of APs in a home environment – where coverage may be the prime consideration. Placement is not a consideration of the worthiness of a protocol.

Regarding medium occupancy limit in the current standard, what is the difference? M O L is to solve the problem of two PCF starting at the same time. This proposal make it more explicit with the CFBs and how they interact. It is the same in some sense.

There are lots of corner cases. If a DCF device cannot hear a PC, it could transmit at the same time. –(take off line)

The Microsoft API talks to the TCP/IP stack, not to the driver. It expects that the MAC provides 802.1p services, not connection oriented services.

NDIS does specifically provide QoS parameters.

See Microsoft QoS FAQ document.

Document 96, HiperLan type II DLC, Gunnar Rydnell, Ericsson

Discussion

is 2mS PDU repetition rate variable? It is fixed. Does it change with different PHYs? How does this rate scale with the different PHYs of 802.11? The rate in HiperLan is fixed.

In dynamic frequency selection, there is an allocation of frequencies to AP, What entity or coordinator does that allocation? There is an algorithm in the APs that determines that based on interference.

If the convergence layer is part of the scope, does it completely define the mapping of RSVP? It is left to multiple functions in the convergence layer.

How are power save devices handled? There is a power save mechanism – the sleep period is individually defined.

Is there any backward compatibility with existing 802.11 legacy systems? Only the performance requirements are considered, not backward compatibility.

The dynamic frequency selection is driven by a regulatory requirement? It is a feature, but a European requirement as well for CEPT.

Adjourn

Thursday Afternoon

Call to order

Presentation of Papers

1.1.7.14. *Document 089, Frame sorting for PCF, Steven Gray*

Requirements definition

We will follow the process defined by yesterday's motion, and generate a baseline requirements document.

Discussion

Is frequency control something that we should put in the MAC as a requirement. It was presented as a requirement for Europe, and we should consider it a requirement for TGe.

Suggestion that work on requirements continue between meeting on the reflector. To be discussed later in the agenda.

Suggestion to lay down guidelines now;

Review of process:

We will answer the general nature questions of scope and requirements.

There is some work that has been done in the study group to give a framework of what has to be done.

In step 2, we use the answers of the questions to provide the basis of requirements.

We will capture requirements into a new document.

We also need to work on evaluation criteria for proposals.

Call for Papers on requirements.

Document 126 – QoS Questions Responses Amar Ghori, et al.

Document 125 – QoS MAC evaluation

Review of questions and answers from Bob O'Hara's document.

Presentation

Document 126 – QoS Questions Responses, Amar Ghori, et al.

Discussion

In the original QoS Paper from Microsoft, they define QoS in terms of the service needs of the applications. Based on this and the IETF QoS mechanisms, QoS is

a mechanism to support certain applications. Is there a disjoint-ness between parameters and applications. A- we are working in layer 1 and layer 2. We have to boil the application needs down to parameters that are relevant at layer 1 and layer 2.

What is being proposed is that QoS is a thing that can be measured. Other standards that deal with QoS deal with levels of QoS, not a fixed level. We need to insure that we cover multiple levels of QoS. A – Other standards have used these quantities for defining QoS from a layer 1 or layer 2 perspective.

There are a family of ITU standards from the telecommunications industry that are not represented here for the service access point. Also believes that Diffserv belongs here. A- we had a discussion of diffserv, and as it is now considered by IETF, it is for the backbone. There are IETF services for the edge as well, but not Diffserv.

We need to more carefully investigate the direction of the IETF regarding diffserv.

Regarding protocol dependant parameters, we can't standardize something that is not fixed. We need a fixed set of parameters. A – One of the complications is that 802.11 has no problem, but if you look at how this will be applied in other applications, there may be other interfaces to the MAC. Doesn't want to limit the applications. It is agreed that there must be a fixed set of parameters to standardize.

From the Microsoft QoS document, they only discuss diffserv and they don't use intserve. A- it is an example of an API, it is not the only API.

regarding 802.1p it is not required to have priority and queuing. A – but if you want to support multiple priorities, you need it.

Regarding the operating system API's, are we proposing that our MAC be only supported in Windows 2000? Who will develop APIs for other OS's? A- all we are saying is that we can't force OS vendors to support QoS. We want to support those that we know of. Microsoft is actively expanding QoS support in all their OS's. QoS is a part of Winsock 2.

From a practical point of view, if QoS is only supported by a limited set of OS's, is it worth supporting it for that small set? A – we want to enable applications beyond OS support – home environment, handheld, etc.

These answers are not meant as a final response

The definition you have here seems to be wired network centric. This Definition of QoS needs to specify that you maintain connection while roaming AP to AP. A – you don't consider frame loss as an issue with handoff?

An alternative reply to "what protocol is on the other side": The 802.11 MAC should be protocol agnostic.

HiperLan decided to standardize on DLC. In 802.11 we standardized on the 802.service interface. These parameters are standardized in 802.2, but the world is moving on. We may need to enhance 802.2 to supplement what is there.

How do we move forward with this to satisfy the requirements? How do we close on it?

Chair suggests to move forward to a rough draft of requirements.

Discussion:

We haven't come to closure on the scope yet.

At what level do we want to start? Do we start with applications?

The 802 architecture continues to evolve. We have unique issues with mobility and regulatory.

How do we narrow the scope

Drafting of document 130 "Working-Draft-TGe-Requirements"

Next Step Discussion

It is out of order to continue to evaluation criteria before the functional requirements are completed.

We need to establish guidelines before starting simulations, otherwise results are not comparable.

We have an agenda item to complete some evaluation criteria, but it is insisted it is out of order.

Document 125 has been submitted, and can be reviewed off line by the members.

Agenda item on evaluation criteria is cancelled.

Discussion on inter-meeting communication and progress

Communicate on reflector

Small Ad Hoc meetings

802.15 has weekly phone call, and puts minutes of call on the reflector.

Show of hands on complete proposals: Harry, Maarten, Wim, Masayuki, Duncan

Can we have bi-weekly teleconferences between now and the next meeting.

Those with proposals will drive the teleconferences.

Is this only for evaluation criteria, or more general?

We have not pre-defined an agenda, but they can be announced.

We need better visibility of what is progressing in the Security part.

A single subject teleconference could be useful – we only have 7 weeks.

What is the agenda for the first call in two weeks?

Agenda for first teleconference:

Start with discussion of Document 125 on testability and evaluation.

Teleconferences

Motion to have a teleconference in two weeks (Wednesday, May 24, at 8:00AM PDT) to discuss evaluation and testability, based on paper 125. It is an Ad-Hoc teleconference. The minutes will be circulated on the reflector by the TGe secretary.

Moved Harry Worstell

Seconded Evan Green

Discussion

How many people will attend ? approx 31

The call-in details will be announced on the reflector for all 802.11 members.

Vote: Motion passes 18:0:6

Motion to have subsequent Ad-Hoc teleconferences on June 8 and June 22 at 10:00AM PDT. The chair will send proper notification if the teleconferences are to be cancelled. The minutes will be circulated on the reflector by the TGe secretary.

Moved John K

Seconded Sungyen

Discussion

Vote: Motion Passes 17:1:5

John Faketselis will be the chair of these teleconferences.

New Business

None

Next Meeting Agenda

Continue with same goals as this meeting

Presentation of Proposals and technical papers.

Requirements

Evaluation Criteria

Adjourn

**IEEE P802.11
Wireless LANs**

Tentative Minutes of the 802.11 TGf Task Group, Seattle, WA

Date: May 08, 2000
Author: Mike Trompower
NeTeam Inc.
Phone: 330-664-1900
Fax: 330-664-1999
e-Mail: miket@neteam.net

Meetings at the 802.11 May 2000 Interim

Monday Afternoon

- **TGf Called to Order by Chairman Dave Bagby at 1PM**
16 people in attendance
- **Selection of Secretary – ‘volunteer’ Mike Trompower**
- **Approval of Agenda (no objections)**
- **Using document 2000/094 Dave Bagby reviewed**
 - *the goals of TGf*
 - *to develop a recommended practice for an IAPP which provides the necessary capabilities to achieve multivendor access point interoperability across a distribution system supporting 802.11 products.*
 - *the PAR for TGf*
 - *states that at a minimum the IAPP should be directed for an IP based distribution system*
 - *The TGf meetings should be used as venue for presenting results – papers and work should be done between meetings using the reflectors*
- **Discussion of whether or not the 802.11e task group work and schedule will impact the work/schedule that this task group must accomplish**
- **Discussion of whether the IAPP should reside at Layer 2, Layer 3 or both**

Motion #1

Moved Duncan Kitchin
Second Bob Ohara

Move to accept the top-level schedule as follows:
1st TG meeting – May 2000
Functional Determination and Proposals – July 2000
1st written Draft and start review – Sept 2000
First Internal .11 ballot – Nov 2000
Schedule fork Decision – Jan 2001
- hold for .11e progress or start external ballot?

Discussion: none

Motion Passes: TGf 6-0-0

- **Presentation of papers**
 - *Document 64 and 64A by Bob Ohara*
 - *presented a history of IAPP development*
 - document 94/17 creates the idea of handoff
 - document 95/188 deals with ESS concepts
 - document 96/108 defines ANNOUNCE and HANDOVER protocols
 - *Bob claims that the above documents do not address the wireless distribution system and asks the question 'should we consider it?'*
 - *minimal capability should be a handover protocol which performs the following:*
 - terminates association with the old AP
 - updates layer 2 DS devices
 - provides for optional forwarding of buffered frames
 - *additional capabilities to consider*
 - standardized AP configuration & management
 - access point 'location' capability
 - goal of 'No Touch' out of box experience
 - AP heartbeat

- *Document 90 by Gary Spiess*
 - *intro to current network architectures*
 - *slide5 gives a list of reasons for enhancing the spec with IAPP (and enhancing doc96/108)*
 - *"A station must have at least one association"*
 - AP drops association after TX error, leaving the station unassociated, DS frames are lost
 - A delayed or retried handover DS leaves a station unassociated
 - Detecting obsolete handovers - can 'mess' up the current tables
 - *- introduces concepts of enhanced 'master ap' functionality*
- *Discussion of papers*
 - How to handle a station's recovery mechanism(s), should a station transmit a regular (null data) frame?
 - Should IAPP frames be made to operate at HIGHEST quality of service level?
 - How to determine network time?
 - This paper presents several items which must be addressed in 802.11e because they require additional client functionality - recovery mechanisms, packet sequence number improvements.
 - The best roaming scenario is like cellular make before break concept.
- **Next step – determine the functional requirements that TGf will attempt to solve**
- **Adjourn at 3:15 (by unanimous consent)**

**IEEE P802.11
Wireless LANs**

Tentative meeting minutes of the Regulatory ad-hoc group

Date: May 10, 2000

Author: Vic Hayes,
Lucent Technologies
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Agenda

1. Approval of agenda
2. ITU-R input 00/085 (ITU-process.PPT)
3. UK-RA Consultation, response to strawman 00/067, 00/080, response vicjk Monday
4. Docket 99-231 Tuesday 8:30-10
5. Work mode in future
6. AOB Thursday 8:30-10 if needed

Opening

Vic opened the meeting on 10:00 AM with 4 people in the room.

1. Approval of the agenda

**Denis Kuwahara moves to approve the agenda shown/ David Skellern seconds
This motion passes unanimously with 3/0/0.**

2. ITU-R input

Denis introduced document 00/085, a paper from the Joint 8a/9b Rapporteursgroup. Through the introduction we identified a number of other documents:

00/104 a paper from the JPL, sent from SG 7 to the Joint 8a/9b Rapporteursgroup

00/101 Liaison paper from BRAN

Draft letter to ITU from ETSI BRAN requestion WRC agenda item for 2002

Failed Draft letter to the US delegation prepared by 802.16

We agreed that all 802.11 members with an interest in 802.11a should request their companies to immediately submit pledges for support to the secretary of ETSI-BRAN. Evan Green will contact the ETSI-BRAN secretary for the deadline.

3 UK-RA

Vic presented a file with the points he proposes we make in response to the UK-RA strawman proposal. The group discussed the material, changed some parts and then agreed that those points were approved to be made. Vic to prepare a presentation by Wednesday noon for presentation to the joint meeting.

Move to approve the points made in document 00/103 to be completed by additional queries made to Jan Kruys.
Moved by Evan Green, seconded by Denis Kuwahara. No discussion, Motion passed unanimously with 3/0/0

The meeting adjourned at 3 PM for Tuesday 8:30 AM.

Attendees on Monday: Denis Kuwahara, Evan Green, David Skellern and Vic Hayes (Chair)

Tuesday Morning

Agenda

- | | |
|------------------------|----------------------------|
| 4. Docket 99-231 | Tuesday 8:30-10 |
| 5. Work mode in future | |
| 6. AOB | Thursday 8:30-10 if needed |

Tuesday, 9 May 2000

Vic opened the meeting on 8:40 with about 48 people in the room.

4. Docket 99-231

Bruce Kraemer asked for a 20 minute time slot to prepare for the presentation.

In the time that remained, Vic reviewed the agenda items 2 and 3. During the review, Evan Green reported that he had learned from the ETSI secretary that the window has closed. No time to do it anymore.

5. Work mode in future

Vic explained that with 3 wireless groups having similar requirements, it may be a good idea to bundle the talents, experience, knowledge and effort from all 3 groups. Meetings could be held with credit for attendance going back to the favorite group of the expert.

A straw poll was held whether that idea would be worth implementing. The result was:

4 approveing /0 disapproving /0 without opinion....

6. AOB

6.1 Approval procedures at FCC

Tim Wakely of HP requests whether it is appropriate to ask the FCC to make simpler approval procedures if the PHY is separate from the MAC and combinations would not needed to be approved.

In summary the answer is: The FCC will give "limited Module approval" to enclosed radio modules which are intended to be installed in other devices such as computers. The power supply and data inputs have to contain buffers that will protect the module from being driven over the approved parameters.

6.2 Interesting links

To follow the proceedings at the FCC go to URL:

<http://gullfoss.fcc.gov:8080/cgi-bin/ws.exe/prod/ecfs/comsrch.hts>

and fill in the parameters of the subject you want to pursue, for docket 99-231, for instance, fill in 99-231 in the field for proceeding and hit the button: retrieve document list.

To know more about the WECA filings go to URL:

<http://www.wi-fi.org/>

and hit FCC notice.

European Radio Committee Decisions <http://www.ero.dk/scripts/docmanag98/dm.dll/QueryDoc?cat=Decision>

<http://www.ero.dk/doc98/Official/Pdf/DEC9923E.PDF>

The meeting was adjourned at 9:30.

Thursday, May 11, 2000

Vic opened at 9:30 the meeting with Tomoki Ohsawa, Denis Kuwahara and Caldwell Crosswy in atendance

Agenda approved by unanimous consent

Comments on Presentation to UK-RA

Vic presented the following comments to the Draft 1:

1. There is no positive opening statement
2. The statement to remove HIPERLAN/1 may be too bold, suggest to change into a suggestion
3. Follow up by changing to "add HIPERLAN/2 and 802.11a devices" to the allocation.
4. Remove the stress on exemption of the DFS to service providers pending better studies
5. Redo the Summary accordingly

We reviewed a proposed new verwson (Draft 2, prepared by Vic) and made further changes.

Draft 3 was distributed and reviewed.

Denis moved to submit doc.: 106 Draft 3 to the closing plenaries of 802.11 and 802.15 for approval to present at the related conference and to record the results of the votes in the document/ Tomoki seconds. Unanimously approved with 2/0/0

Japanese regulation in the 5 GHz band

Tomoki introduced document 11-00/128. In response to a question, Tomoki reviewed the Japanese and confirmed that the power density limit is 20 mW/MHz EIRP. Consequently he will publish revision 1. The group thanked Tomoki for the input and prposed to make a place available on the web site to make the information available to the public.

ETSI liaison on 5 GHz

Vic reported the receipt of document 00/129. This document is a response to the letter sent earlier by the IEEE Standards Board to the ETSI Board, requesting to recognise 802.11a as a member of the HIPERLAN family. The subject letter requests 802.11 to prepare technical input to be received at their June 27-30 meeting. Unfortunatly, the letter was send as late as May 10, which was at the last day of the 802.11 meeting. The group suggests that the plenary mandates the 802.11 chair to send a letter to ETSI-BRAN reporting the late arrival of the letter and the lack of time for the 802.11 group to respond.

The Regulatory ad-hoc recommends further that the 802.11 chair sends the incoming and the outgoing letter to the secretary of the IEEE Standards Board for information.

AOB

Denis offered to publish the e-mail address of Brian Honeycut of JPL on the e-mail reflector so that members can review and comment back to Brian.

The meeting adjourned at 11:04

00/085	reg	JRG-8A-9B (Denis Kuwahara, Boeing)
00/101	reg	Liaison from ETSI-BRAN regarding a request for an agenda item for WRC2002, including an IEEE802.16 proposal (Vic Hayes, Lucent)

00/102	reg	Tentative Meeting Minutes of the Regulatory Ad-hoc Group May00 (Vic Hayes, Lucent)
00/103	reg	Approved Points Response to UK-RA Strawman Proposal for the 5 Ghz Band (Vic Hayes, Lucent)
00/104	reg	Sharing in the Band 5250-5350 MHz Between the Earth Exploration-Satellite Service (Active) Allocated in this Band and the RLANs (Denis Kuwahara, Boeing)
00/105	reg	Regulatory update (Jim Zyren/Bruce Kraemer, Intersil)
00/106 Draft 1	reg	IEEE802.11 Response to the UK-RA Strawman Proposal" (Vic Hayes, Lucent)
00/106 Draft 2	reg	IEEE802.11 Response to the UK-RA Strawman Proposal" (Vic Hayes, Lucent)
00/106 Draft 3	reg	IEEE802.11 Response to the UK-RA Strawman Proposal" (Vic Hayes, Lucent)
00/123	Reg	An estimate of the minimum number of channels for full capacity 54 Mbit/s 802.11a in a dense cellular structured network (David Skellern, Radiata)
00/124	Reg	Report of the regulatory ad-hoc group
00/128	W	Japanese regulation of the 5 GHz band
00/129	W	Liaison Statement from ETSI-BRAN

**IEEE P802.11
Wireless LANs**

Minutes of the 802.11 HRbSG Study Group, Seattle, WA

Date: May 11, 2000
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Meetings at the 802.11 May 2000 Interim

Minutes of the Higher Rate 802.11b Study Group, HRbSG

Chair, Mathew Shoemake, Ph.D.

Secretary, Carl Andren

Monday, May 8, 2000-05-11

Review of "tentative agenda", document: 00/077 by chair

vote on agenda
37/0/2

Solicit volunteers to work tomorrow on AD-HOC group to work on draft PAR and 5 criterion

Steve Gray
Srinivas Kandala
Mark Webster
Matthew Shoemake
Nersi Narazi
Marcus Gahler
Chris Hegard
Carl Andren

Group approved by unanimous consent

Presentation of papers

Paper 00/86, by Steve Gray, Nokia
"A brief Overview of Information Theory and Channel Coding"
Theme: Channel coding makes a bandwidth efficient link.

Paper 00/69 by Srinivas Kandala, Sharp Labs
"Proposal for extension of the IEEE 802.11b PHY to Higher Rates (>20 Mbps)"
Theme: use 16-PSK with CCK for 22 Mbps, it has 4 dB lower link margin vs 11 Mbps

Adjourn for lunch at: 11:45

Reconvened at 1:00 PM

Paper 00/72 by Mark Webster, Intersil

"Market Acceptability Throughput Issues for HRb"

Theme: we need at least 24 Mbps for .11a or 33 Mbps for .11b to get 20 Mbps throughput.

Paper 00/93 by Carlos Rios, 3Com

"Proposed Application for HRbSG Technology: Wireless Home Networks"

Theme: We need 40 Mbps and a traffic cop for coordination.

Paper 00/62 by Enrique Aguado, Supergold Communications, Ltd.

"Supergold Encoding in WLAN Application "

Theme: MBCK coding can achieve good performance up to 30Mbps

MBCK = M-ary Bi Code Keying, uses two banks of 64 correlators.

Paper 00/73 by Mark Webster, Intersil

"Technical Feasibility of Spreading Codes for HRb."

Theme: Spreading codes can provide good multipath performance.

Paper 00/91 by Chris Heegard, Alantro

"Higher Rate 802.11b, Double the data rate"

Theme: A higher rate PBCC mode is available for 22 Mbps

Break at 2:50 to 3:15

Paper 00/96 by Chris Heegard, Alantro

"Spread Spectrum and 802.11b"

Theme: CCK is not spread spectrum, nor is PBCC

Paper 00/74 by Mark Webster, Intersil

"Technical Feasibility of CCK Extensions for HRb"

Theme: we need to consider the regulatory issue.

Presentation of papers is complete for now.

There are 26 voting members present, so no quorum is present

Add Jan Boer (Lucent), Enrique Aguado (SuperGold), Juha Heiskala (Nokia), and Al Petrick (Parkervision) to the Ad-Hoc group by unanimous consent

Announcements

Adjournment at 4:30

Wednesday, 4/10/00

Opened 8:30

Reviewed agenda and information on status of HRbSG by chair in document: 00/078

Presentation by chair of results of ad hoc task group (for writing the draft PAR and draft 5 criteria) contained in documents: 01148SG-HRbSG-Draft-PAR.doc and 001158SG-HRbSG-Draft-5-Criteria.doc

Debate on PAR and 5 Criteria.

Argument over "speed", "throughput", and "data rate" resolved in favor of "speed".

Adjourned at 10:00 AM.

Thursday, May 11, 2000

Opened 10:45

Review of document 00/114r1 to create 00/114r2

A decision was made not to include words about and definitions of interoperability and coexistence in the PAR but put in a statement that the new standard should implement all mandatory portions of 802.11b.

It is intended that the project use the 802.11 MAC, but reserve the possibility that changes may be needed to accommodate the new rates.

Straw poll 18/0/0 on the Par as it stands

Review of 00/115r1 to create 00/115r2

Move to accept documents 00/114r2 and 00/115r2 as amended in this meeting as the PAR and 5 Criteria and forward them to the working group for approval.

Moved by Jan/Nersi

Passes: 16/0/0

Adjourn at 12:15