
**IEEE P802.11
Wireless LANs**

Tentative Minutes of the IEEE P802.11 Full Working Group

January 21 - 25, 2002

Wyndham Anatole Hotel, Dallas, Texas

802.11/15 Joint Session: Monday, January 21, 2002

1.1. Introduction

- 1.1.1. Meeting called to order by Stuart Kerry at 8:15AM.
- 1.1.2. Agenda of 71th session of 802.11 is in doc.: 11-01-666r2-W
- 1.1.3. Secretary – Tim Godfrey

1.2. Roll Call

- 1.2.1. The 261 people in the room introduced themselves.
- 1.2.2. There are 65 new participants.

1.3. Opening items

- 1.3.1. Introductions of officers and duties (from standing agenda document 01/278)
- 1.3.2. Review of voting rights.

1.4. Report on membership and voting status

- 1.4.1. 802.11
 - 1.4.1.1. Document 01/402r5
 - 1.4.1.2. 266 voters, 73 nearly voters, 339 potential voters
 - 1.4.1.3. 133 voters needed for quorum.
 - 1.4.1.4. Voting membership is 224.
- 1.4.2. 802.15
 - 1.4.2.1. 89 voting members, 9 nearly.
 - 1.4.2.2. Will lose 9 people due to non-voting on letter ballots.

1.5. Attendance Book

- 1.5.1. The procedures for filling out the attendance book are reviewed.

1.6. Logistics

- 1.6.1. Meeting fees, breaks, document distribution.
- 1.6.2. Straw poll of people not using wireless – 15.
- 1.6.3. No people have no access to documents.

1.7. Patent Policy

- 1.7.1. The chair provides an overview of IEEE patent policy and IP statements.
- 1.7.2. We are making sure the chairs of the relevant Working Groups receive copies of IP statements that are filed
- 1.7.3. No new statements have been filed for either 802.11 or 802.15

1.8. Publicity chair

- 1.8.1. Brian Matthews is the candidate for the Publicity group chair. We will vote in on Wednesday.
- 1.8.2. Jim Meyer is taking over from 802.15.
- 1.8.3.

1.9. Agenda Rules

- 1.9.1. The 802.11 business hours are 08:00 to 9:30PM. 802.11 has a hard stop time at 9:30PM.
- 1.9.2. 802.15 business ours are advisory, and there are no hard stops.

1.10. Email Reflectors rules

- 1.10.1. Reflectors are for technical business of the committee. Commercial messages, or personal opinions, are inappropriate.

1.11. Election of Working Group Chairs

- 1.11.1. WG Chairs will be up for re-election at the March Plenary.
- 1.11.2. The 802.11 chair and officers will run for re-election as a team.
- 1.11.3. The 802.15 chair and officers will run for re-election as a team.
- 1.11.4. Paul Nicolich, 802 chair, introduces himself. He will also be up for re-election in March.
 - 1.11.4.1. He is looking for two vice-chairs for the 802 committee.
- 1.11.5. The Regulatory ombudsman is also up for reelection. There will be 13 ExCom positions.

1.12. IEEE RAC

- 1.12.1. This is the group that allocates MAC addresses. They are looking for someone from the wireless working groups. Involves one meeting per year at an 802 Plenary.

1.13. Projectors

- 1.13.1. Projectors are assigned to chairs by number, and the TG chairs are responsible for them.

1.14. Review of Agenda

- 1.14.1. The chair reviews the agenda.
 - 1.14.1.1. Joint sessions are annotated with "bubbles" on agendas to indicate who is joining the group in the room.
 - 1.14.1.2. The chair calls for any old or new business or 802.11 and 802.15. 802.11 is approving the weeks agenda. 802.15 is approving this session.
 - 1.14.1.3. No old or new business.

1.14.2. 802.11 Vote on adopting the agenda:

1.14.2.1. Motion ID 330

1.14.2.2. The agenda is adopted unanimously 75:0:0
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1.14.3. 802.15 Vote on adopting the agenda

1.14.3.1. By unanimous consent

1.15. Summary of key working group activities

1.15.1. Interim meetings

1.15.1.1. March 11-24 St Louis Hyatt.

1.15.1.2. May 2002 will be Sydney, Australia. We have a signed contract with Motorola. The Wentworth Rydges, in the harbor. Approximately \$125 per night US. May 12-17, 2002

1.15.1.2.1. Tour Hosts – meeting organizer – will have information coming out in next few weeks. There will be links to register about Feb 15 for both meeting registration and hotel reservation.

1.15.1.2.2. Credit cards will not be charged until 3 days before the event. Encourages everyone to register early to help with planning.

1.15.1.2.3. Special tour packages will be available from Tour Hosts.

1.15.1.3. July 8-11 Vancouver BC

1.15.1.4. September 2002 will be in Monterey, CA. We have a contract in hand for Hyatt Monterey. Sept 9-13, 2002. Cisco will be the sponsor

1.15.2. Discussion

1.15.2.1. What is the mechanism for selecting interim meeting? A series of straw polls, and selection of sponsors. There is no official voting process for selecting locations. Straw poll shows that over 75% plan to attend.

1.15.3. Financials

1.15.3.1. We are required to end a year with zero balance. This meeting will not make a profit, so we are strapped for cash. Our first opportunity to gather money for new equipment is September.

1.15.3.2.

1.16. Objectives and activities for the session

1.16.1. Review of November 2001 ExCom meeting.

1.16.1.1. Attendance was 929 people.

1.16.1.2. Details in 802.15 document 01/529r0.

1.16.1.3. The 802 Coexistence group was inadvertently not renewed, and expired.

1.17. 802.11 Subgroup Updates

1.17.1. TGe

1.17.1.1. TGe held letter ballot 30.

1.17.1.2. Of 266 votes, we had 221 votes. 33 abstentions.

1.17.1.3. Result was 55% yes.

1.17.1.4. We need to get to 75% for recirculation. We hope to resolve the common comments this week, and ask the No voters will change to Yes. If we can get to 75% conditionally we can go to a recirculation ballot.

1.17.1.5. Objectives – resolve comments, enable a new draft, get to 75% approval.

1.17.1.6. Comments have been merged into one document.

1.17.1.7. Approximately 2000 comments, with 750 editorial.

1.17.2. TGf

- 1.17.2.1. Will finish processing comments from LB29.
- 1.17.3. TGg
 - 1.17.3.1. Document 047. TGg enabled the first draft 1.0 in November. The Editor has made editorial changes to create version 1.1. It is on the web site since the beginning of January
 - 1.17.3.2. Objectives –
 - 1.17.3.2.1. General submissions
 - 1.17.3.2.2. Enable motions to change the draft
 - 1.17.3.2.3. A joint meeting with RREG
 - 1.17.3.2.4. Wants to send out Draft 2.0 to Letter Ballot this week.
 - 1.17.3.2.5. Agenda will be set today.
 - 1.17.3.2.6. There are only 45 days between this meeting and the March plenary. We will try to have all submissions today.
 - 1.17.3.2.7. The editor will incorporate changes on Wednesday.
 - 1.17.3.2.8. We will make a motion to go to LB on Friday.
 - 1.17.3.3. Estimated schedule
 - 1.17.3.3.1. Two rounds of LB, two Sponsor Ballot, end of 2002 by end of year. Hope to accelerate.
 - 1.17.3.4. Discussion
 - 1.17.3.4.1. What is TGg's position on coexistence? The TGg chair doesn't have a position at this point, but will be addressed in the task group. Jim Lansford, coex chair: There has been presentations on coexistence. Perhaps a clause would be appropriate.
 - 1.17.3.4.2. The TGg chair asks for presentations with clearly worded motions.
- 1.17.4. Announcement – Grand A and Grand B have a problem with the air-wall. Please do not use the door between the room or it may fall.
- 1.17.5. TGh
 - 1.17.5.1. Will discuss radar mechanisms this week. We hope to enable a new Letter Ballot this week. Draft 2.0 will be presented on Thursday afternoon.
- 1.17.6. TGi
 - 1.17.6.1. The goal is to get the draft prepared for letter ballot. There will be some presentations on new algorithms to address areas that have not been discussed yet.
- 1.17.7. Wireless Next Generation Standing Committee
 - 1.17.7.1. First official meeting at this session. There are three meetings during the session. WLAN and WAN integration from ETSI BRAN. Presentations on higher rate extensions to 802.11. There will be a joint regulatory meeting.

1.18. Review of 802.11 Document Submissions

- 1.18.1. New procedure for getting document numbers.
 - 1.18.1.1. A folder called Document Number Request contains templates. Fill out the form and save it as Your Name.
 - 1.18.1.2. Harry will open the form and assign a number and save it back with the document number in the file name.
 - 1.18.1.3. When you see your document number, you should erase the file.
 - 1.18.1.4. You can still give a sheet of paper to Harry.
- 1.18.2. Please use the templates.

- 1.18.3. Time sensitive document submissions
 - 1.18.3.1. Time stamps on the server are not acceptable.
 - 1.18.3.2. You must contact Harry Worstell when submitting a time sensitive document. This is during working business hours.
 - 1.18.4. Naming conventions
 - 1.18.4.1. You cannot call documents "standards". We are working on amendments to the standards. Harry is working on a glossary to assist in naming documents.
 - 1.18.4.2. Drafts are not drafts until voted on.
 - 1.18.4.3. If a draft is going to letter ballot, it must be on the server by 4:30PM on Thursday to be voted on in the closing plenary. It has to be submitted in proper form to Harry, and not at 4:29PM.
 - 1.18.5. PDF is not an acceptable format. Documents must be in Office 97 format.
- 1.19. Opening Reports for 802.15**
- 1.19.1. TG1
 - 1.19.1.1. 802.15.1 was forwarded to RevCom. There were procedural faults in comment resolution in Sponsor Ballot. They requested a recirculation. The Sponsor Ballot passed with the same vote as before. It will go to RevCom in March.
 - 1.19.2. TG2
 - 1.19.2.1. Document 02/017. Came with Draft version 01. Version 02 was on the web site in December
 - 1.19.2.2. Working with Bluetooth SIG – sent a letter to BT SIG recommending working on Adaptive Frequency Hopping. 802.15.2 members have been joining BT SIG.
 - 1.19.2.3. 802.15.2 draft will be sent to BT SIG for comments.
 - 1.19.2.4. BT SIG has not decided if they want to collaborate with 802.15.2.
 - 1.19.2.5. Plans – review changes to draft, discuss collaboration.
 - 1.19.2.6. Discussion
 - 1.19.2.6.1. since 802.15.1 has no interference mitigation, can it go forward? No, that is the reason they failed with revcom. We cannot ignore coexistence. All new draft standards have to have a clause on coexistence.
 - 1.19.3. TG3
 - 1.19.3.1. Processing comments on LB. Need to address coexistence, security and power management.
 - 1.19.3.2. Week will be comment resolution. Looking for ways to resolve No votes.
 - 1.19.4. TG4
 - 1.19.4.1. Objectives – bring group up to date on conference calls. Comment resolution on LB 13. Update draft as required. Discuss relationship between IEEE and Zigbee. Update Sponsor Pool.
 - 1.19.4.2. LB 13 was on Low Rate Draft. Received 84% Yes votes.
 - 1.19.4.3. TG4 will not meet until this afternoon.
 - 1.19.5. 3A Study Group
 - 1.19.5.1. ALT PHY Study Group was approved in Austin. Looking at putting an alternate PHY on 802.15.3 MAC. Will generate PAR and 5 Criteria. Have had call for applications. Plan on having PAR ready for WG in May 2002. Call for apps went out on 12 December.
 - 1.19.5.2. This week will listen to Application presentations.

- 1.19.6. **Publicity Committee**
 - 1.19.6.1. Will vote in new chair on Wednesday. Update calendar of events for this year. Coordinate with WECA and conferences. Revisit presentation material for web site.
 - 1.19.6.2. Looking for process to coordinate task group chairs to generate statements for press and ExCom.
- 1.19.7. **Radio Regulatory**
 - 1.19.7.1. Document RR 02/002r0.
 - 1.19.7.2. Letter sent to Republic of China regarding power rules. They returned and requested it be re-sent addressed to the minister directly. Will also go to the FCC.
 - 1.19.7.3. Letter went to US WARC 3 regarding new draft for DFS. Met opposition from Radar people in group 8B.
 - 1.19.7.4. Working on rules changes for wireless PARs. Comment request to wireless email reflectors. Comments will be documented, and a SEC email ballot started.
 - 1.19.7.5. WECA 5GHz committee working on petition to FCC asking for extending UNII band to 5.470 to 5.725 band. Gives FCC a constituency to protect.
- 1.19.8. **802 coexistence**
 - 1.19.8.1. Standing committee is not yet approved. We will have a “birds of feather” session on Wednesday to keep going.
 - 1.19.8.2. Presentation on 802.15.3 and 802.16.
 - 1.19.8.3. Will discuss process to establish standing committee status.
- 1.19.9. **Liaison Representatives**
 - 1.19.9.1. Document 00/406r7
 - 1.19.9.2. 11 / 15 Bruce Kraemer, Peter Murray, Tim Blaney
 - 1.19.9.3. Looking for volunteers for 11 / 16 liaison.
 - 1.19.9.4. 802.11 and NIST – Simon Blake
 - 1.19.9.5. Between 11 and 15 and BT SIG – Tom Seip.
- 1.19.10. **External Liaison Reports**
 - 1.19.10.1. None
- 1.20. Old Business**
 - 1.20.1. **802.11 WG Operating Rules**
 - 1.20.1.1. Move this item to the Wednesday Session
- 1.21. New Business**
 - 1.21.1. None from the Floor.
 - 1.21.2. New Members session immediately after this session.
- 1.22. Session recesses at 10:15**

2. Wednesday Morning, January 23, 2002

2.1. *Opening*

- 2.1.1. The meeting is called to order at 10:45 by Stuart Kerry.
- 2.1.2. Following agenda in document 01/666r4.
- 2.1.3. There are 270 attendees.

2.2. *Announcements*

- 2.2.1. Regular chairs meeting on Thursday at 7:00AM.

2.3. *IP Statements*

- 2.3.1. The chair has received a statement from Intersil on TGi. It will be posted to the web site and sent to the RevCom secretary.
- 2.3.2. Call for any other IP statements – none.

2.4. *Attendance Book*

- 2.4.1. The book has been slow to be passed around. No sessions will be crossed out, so members can sign for earlier sessions. Please don't sign ahead.
- 2.4.2. Task Groups are also keeping their own logs. That is an acceptable back up for the attendance book.
- 2.4.3. Please review contact information.
- 2.4.4. We are looking for electronic methods when budget allows.

2.5. *Review of Sponsor Ballot voting procedure*

- 2.5.1. Reminder to sign up for Sponsor Ballots on the IEEE web site.
- 2.5.2. You have to be an IEEE member and SA member.

2.6. *Review of Agenda*

- 2.6.1. The chair reviews the posted agenda.
- 2.6.2. Is there any new business? No
- 2.6.3. Documentation review
 - 2.6.3.1. Document number requests are on VENUS and VENUS2.
 - 2.6.3.2. Harry is preparing a document detailing rules for time-sensitive documents. You must find Harry to log these documents in. Time stamps are not acceptable.
- 2.6.4. Motion to approve the agenda (Petrick / Jim)
 - 2.6.4.1. Agenda approved without objection.

2.7. *Working Group Rules*

- 2.7.1. Updates to WG rules in document 01/331r2.
- 2.7.2. If there are any other changes needed to the rules, please see the chair or vice chairs.
- 2.7.3. We will go through the rules in the Friday session.

2.8. *Logistics*

- 2.8.1. Social tonight – TI is hosting in the grand ballroom. Starting at 6:30PM.

2.9. New Business

2.9.1. Corrigendum on 802.11 standard.

- 2.9.1.1. Document 340r1, Jon Rosdahl.
- 2.9.1.2. Outlines 85 particular problems with the existing 802.11 standard.
- 2.9.1.3. Task Groups A, B, C, and D B-cor1 are complete, and need to be rolled into the base standard.
- 2.9.1.4. We are working on rolling all these amendments into the standard this year, generating IEEE 802.11-2002
- 2.9.1.5. We could get some of the editorial issues taken care of as well.
- 2.9.1.6. A Standing Committee could be formed to do this work.
- 2.9.1.7. Discussion
 - 2.9.1.7.1. Concern because there is a proposal to change technical material in the standard. That would require a PAR and balloting.
 - 2.9.1.7.2. Agreed, but the editorial issues could be resolved.
- 2.9.1.8. Straw Poll – who would help identifying and assisting in correcting these known editorial problems in the standard? 9 people.
- 2.9.1.9. Straw Poll – how many agree the work is of value to the group. (large number). Who is against it? None.
- 2.9.1.10. Volunteers are requested to get in touch with Jon Rosdahl.

2.9.2. Cluster Multihop Network Controller QoS.

- 2.9.2.1. Document 668r1. J Habetha.
- 2.9.2.2. Overview
 - 2.9.2.2.1. Need for multihop networks. Range of Hybrid Coordinator limits range of BSS. Capacity of BSS is limited by the capacity of one frequency channel.
 - 2.9.2.2.2. Allows interconnection of BSSs.
 - 2.9.2.2.3. Requires a polling based access mechanism as in TGe HCF, and frequency agility as in TGh.
 - 2.9.2.2.4. This is forwarding based on HCF function of TGe.
 - 2.9.2.2.5. Today QBSSs can only be connected through wireless infrastructure. Cluster bridges could allow interconnection of QBSSs over wireless links.
 - 2.9.2.2.6. Proposal of multi-frequency forwarding.
 - 2.9.2.2.7. Problems with IBSS dynamic HC selection are identified.
 - 2.9.2.2.8. Routing would be handled at layer 3.
 - 2.9.2.2.9. Looking for partners and feedback
- 2.9.2.3. Discussion
 - 2.9.2.3.1. The chair observes that this is in the realm of multiple Task Groups. The WNG is requested to explore this, and report to the WG chair.

2.9.3. Call for interest in 802.11a High Rate extension

- 2.9.3.1. TK Tan.
- 2.9.3.2. WNG discussed 802.11a high rate extension. We want to collaborate with ETSI/BRAN as well.
- 2.9.3.3. Straw poll of 47:0:5 indicated strong interest in 802.11a high rate.
- 2.9.3.4. WNG decided to continue discussion in the March plenary.
- 2.9.3.5. Making call for participation, and asking for relevant documents to be submitted to the WNG.
- 2.9.3.6. Straw Poll of level of interest in 802.11a high rate extension, and continuing discussion in March:
 - 2.9.3.6.1. Straw Poll results: 145 for, 2 against, 41 abstain

2.9.4. IETF collaboration with TGj

- 2.9.4.1. Dave Halasz, Document 02/040 containing letter to IETF
- 2.9.4.2. EAP is an IETF RFC.
- 2.9.4.3. TGi felt that this work should get done at IETF.
- 2.9.4.4. EAP is part of PPP extensions in IETF. TGi thought sending a letter to IETF IESG chair from 802.11 would help.
- 2.9.4.5. IETF is considering creating new EAP working group.
- 2.9.4.6. This letter also indicates that the new charter of the new IETF WG should include the needs of 802.11 TGi.
- 2.9.4.7. This is an informational request.
- 2.9.4.8. From a procedural point of view – the chair of 802.11 will copy this letter to the 802 ExCom.

2.9.4.9. Motion – to instruct the IEEE 802.11 chair to forward the letter contained in document 02/040 to the chair of the IETF/ESG.

- 2.9.4.9.1. Moved Dave Halasz on behalf of TGi.
- 2.9.4.9.2. Motion ID 331
- 2.9.4.9.3. Vote on the motion: Passes 112:0:7

2.9.4.10.

2.9.5. Recirculation straw poll for TGe

- 2.9.5.1. John Fakatselis
- 2.9.5.2. Overview
 - 2.9.5.2.1. Many members have not participated in 802.11 balloting. Would like to make notes on the recirculation ballot step in the process.
 - 2.9.5.2.2. The letter ballot on a draft gets comments from the voters. The next step is recirculation. At that point, issues that are closed cannot be re-opened. New No votes are only allowed on changes or on open No votes from previous ballots.
 - 2.9.5.2.3. Recirculation is not bound to 40 day ballots. We can have 10 day recirculation ballots to speed progress.
 - 2.9.5.2.4. Balloters are not required to respond to recirculation ballots if they have voted previously.
 - 2.9.5.2.5. TGe will attempt to propose alternative resolutions to comments, and ask for No Votes to be changed to Yes.
 - 2.9.5.2.6. Non Specific Comments are not accepted. Negative votes have to be accompanied with specific objections, and suggestions on what could be done to satisfy the voter.
- 2.9.5.3. Status of TGe
 - 2.9.5.3.1. Need 38 “No vote” reversals to go to recirculation.
 - 2.9.5.3.2. Have identified 27 no votes where we are close to resolution. We have 32 abstains.
 - 2.9.5.3.3.
- 2.9.5.4. Straw Poll
 - 2.9.5.4.1. For LB30, how many No Voters are present? 55
 - 2.9.5.4.2. For LB30, how many Abstain voters are present? 14
- 2.9.5.5. Form for reversing a No Vote – will be available in the TGe session this afternoon.
- 2.9.5.6. Discussion
 - 2.9.5.6.1. Suggestion that the form say “I change my vote”
 - 2.9.5.6.2. Feels that this is the wrong thing to do. There are sections that are not written – such as state machines. The state machines are supposed to be normative.
 - 2.9.5.6.3. This has been referred to the committee and will be dealt with in the TGe committee.

2.10. Announcement

- 2.10.1. The TGg chair notes that there were three versions of TGg draft 1.1, Word, Word with Revision Tracking, and PDF. The draft without revisions, in Word Format was incorrect, and has been corrected on the server.

2.11. *The meeting was recessed at 12:05PM*

3. Friday Closing Plenary, January 25, 2002

3.1. *Opening*

- 3.1.1. The meeting is called to order by Stuart Kerry at 8:05
- 3.1.2. Agenda in document 01/666r4.
- 3.1.3. Document 02/116r0, agenda for March 2002 meeting is now on the server.
- 3.1.4. The agenda is approved without objection

3.2. *Announcements*

- 3.2.1. Task Group updates to the website by Monday Jan 28th.
- 3.2.2. Feb 4th, March 4th, scheduled teleconferences for chairs.
- 3.2.3. Call for new IP statements? None.

3.3. *Attendance book*

- 3.3.1. Updates to Al Petrick
- 3.3.2. Audio recording and photographs are not allowed.

3.4. *Operating Rules Update*

- 3.4.1. Current version is 01/331r2
- 3.4.2. New revision is 331r3. editorial changes to sec 2.5, 2.5.2, 2.5.5, 2.8.1, 2.9, and Roberts rules 10th edition.

3.5. *Announcements*

- 3.5.1. Loaner WLAN cards due back at noon today
- 3.5.2. We are still working on electronic mechanisms to accomplish attendance book electronically.
- 3.5.3. There are 145 people in the room.

3.6. *Document List Update*

- 3.6.1. We have about 120 documents now. At this rate we will have over 700 this year.
- 3.6.2. Requests feedback on document numbering mechanism. Straw Poll – who likes this new mechanism? Unanimous in favor.

3.7. *Task Group Reports*

3.7.1. TGe – John Fakatselis.

- 3.7.1.1. Did not complete comment resolution
- 3.7.1.2. Did address many issues with many comments.

802.11e Report

Dallas TX,
January 2002

Tge Activities Between Meetings

• WEEKLY TELECONFERENCES PER THE FOLLOWING
TOPIC AREAS:

- Burst acks (Monday)
 HCF rules (Tuesday)
- AP mobility (Wednesday)
- Mac Frames (Thursday)
 FEC (Monday)
- OBSS (Thursday)
- Everything else (Wednesday)

TELECONFERENCES BEGIN THE WEEK OF FEB 04
ADDITIONAL DETAILS WILL BE POSTED ON REFLECTOR

Next Meeting Objectives

- Continue with LB#30 comment resolution.
- Forward draft for new LB or recirculation.

- 3.7.1.3. Announcing TGe teleconferences between meetings. Details to be posted on the reflectors.
- 3.7.1.4. Groups and Leaders
 - 3.7.1.4.1. Burst Acks – Srin
 - 3.7.1.4.2. HCF – Jin Meng
 - 3.7.1.4.3. AP Mobility – Adrian
 - 3.7.1.4.4. MAC frames – Matthew & Khaled
 - 3.7.1.4.5. FEC – Sunghyun
 - 3.7.1.4.6. OBSS – Matthew (after MAC Frames)
 - 3.7.1.4.7. Everything Else – Keith A
- 3.7.1.5. Starting week of February 4th.
- 3.7.1.6. Objectives for next meeting
 - 3.7.1.6.1. Comment resolution, and forward Letter Ballot at next meeting.
- 3.7.1.7. Q&A
 - 3.7.1.7.1. Discussions will be communicated through the 802.11 reflectors.

3.7.2. TGf – Dave Bagby

- 3.7.2.1. Report in 02/033

802.11F
Meeting Report
Jan 2002

Jan 2002 802.11 F Agenda

- Call to order
- Administration Stuff
- Agenda Adoption
 - Status / Goals for Mtg
 - Old / New Business
 - Papers & discussion
 - LB 29 comment response completion
 - Draft 2.2+ completion
 - Draft Adoption / WG ballot start request
 - Adjournment
- On to the real work...

Admin Stuff

- After testing the waters for several meetings, Jon volunteered to become TGF Sec permanently.
 - Move to elect Jon R as TGF Sec.
 - Moved: Richard Paine
 - 2nd: Monteban
 - 4, 0, 0
- Minutes for Jan 2002 are doc 02/025

Admin Stuff

- Matters Arising from the Nov minutes?
 - None.
- Approval of minutes from Nov
 - Moved: O'Hara
 - 2nd: Jon R
 - Vote: 4, 0, 0

Goals for Jan

- LB 29 comment response completion
- Draft 2.2+ completion
- Draft Adoption / WG ballot start request

Agenda adoption

- Moved: to adopt agenda as proposed
 - Moved: Richard Paine
 - Second: Monteban
 - Vote: 4, 0, 0

Unprocessed cmnts from Nov

- Processed approx 60 comments not handled in Nov.
- All LB 29 results in 01/522R8

Interim drafts during the week.

- Draft 2.2: D2.0 with all comments resolved in Nov, + editor actions between mtgs as reviewed by group & approved.
- Draft 2.3: Interim draft during the week; All text for LB comments except security changes.
- Both D2.2 & 2.3 adopted unanimously.

Presentation re secure registry proposal

- See doc 01/564R0
- Proposal got good reaction from group
- Group decided to make effort to turn Slideware into draft text (using D2.3 as a base).
- Much work was done over many late hours
 - Chair's thanks to the drafting volunteers!

January-02

doc.: IEEE 802.11-2002/033

Action from secure registry drafting work:

- Action for 802.11 Chair:
 - ACTION: get IEEE vendor ID so can get UIDs assigned
 - Required before Sponsor ballot.
 - (see Volbrecht & Moskowitz for background.)

- Also, 802.11 chair is requested to please finish prior requests for TCP and UDP port numbers for TGF.
 - Required before Sponsor ballot.

Submission

Slide 11

David Bagby

January-02

doc.: IEEE 802.11-2002/033

Motions to adopt secure registry proposal text

- Draft 2.4 text discussed and reviewed.
- Two Draft versions posted in ToDocKeeper @ 09:45 1/24/2002
 - 2.4 is with change bars from 2.0
 - 3.0 has all revisions accepted.
- Harry informed TGF at 9:49 that both drafts were in TGF drafts area on both Venus and Venus2

Submission

Slide 12

David Bagby

January-02

doc.: IEEE 802.11-2002/033

TGF Motion:

- To adopt 802.11f-D2.4 (change bars relative to D2.0) and 802.11f-D3 (all 2.4 changes accepted).
 - Moved: Robert M
 - 2nd: Bob O'Hara
 - Vote: unan
- Moved to postpone to Thurs 1/24 at 14:00 CST (to satisfy doc posting time rules)
 - Moved: Jon R
 - 2nd: Robert M
 - Vote: unan

Submission

Slide 13

David Bagby

LB Motion:

- Whereas Draft 3.0 contains the adopted resolutions to all comments received from LB 29 (as published in 01/522R8);

TGF moves to conduct a working group letter ballot to forward the 802.11f-D3 to sponsor ballot. Ballot is requested to complete before start of March 2002 meeting.

- Moved: Bob O'Hara
- 2nd: Jon R.
- Vote: unan

Plenary Motion:

- To conduct a working group letter ballot to forward 802.11f-D3 to sponsor ballot. Ballot is requested to complete before start of March 2002 meeting.
 - Moved: On behalf of TGF
 - 2nd: n/a
 - Vote: 75,0,2
- Note from tgf chair to 802.11 chair: intention is an electronic ballot but group did not explicitly state this when the motion was passed in the TG.

January-02

doc.: IEEE 802.11-2002/033

Goals for Jan: End of Mtg status

- LB 29 comment response completion
 - Done
- Draft 2.2+ completion
 - done
- Draft Adoption / WG ballot start request
 - Done / Requested of 802.11 WG

Submission

Slide 17

David Bagby

January-02

doc.: IEEE 802.11-2002/033

Summary:

- LP 29 processing complete
- Revised Draft 3.0 created and adopted.
- LB to start for D3.0
- Output Docs:
 - 01/522R8: Final LB 29 comment responses
 - Tgf draft 2.4 (changes rel to 2.0)
 - Tgf Draft 3.0 (no change bars)
 - 02/25 Tgf minutes
 - 02/033 This report

Submission

Slide 18

David Bagby

Goals for March 2002

- Process (the few expected <grin>) comments from next LB.
- Proceed to Sponsor ballot depending on WG LB results.

- 3.7.2.2. Minutes in document 025
- 3.7.2.3. Processed remaining 60 unprocessed comments.
- 3.7.2.4. Comment resolutions in document 01/528
- 3.7.2.5. Action item for WG chair: Get IEEE vendor ID so we can
- 3.7.2.6. get UID's assigned.
- 3.7.2.7. Action Item for WG chair: request for TCP and UDP numbers still
outstanding.
- 3.7.2.8. New Draft has been posted.
- 3.7.2.9. New draft was approved
- 3.7.2.10. Will bring motion for letter ballot.
- 3.7.2.11. Goals for March – process LB comments.
- 3.7.2.12. Start Sponsor Ballot.

3.7.3. TGh – Mika Kasslin

- 3.7.3.1. report in document 02/035r0

TGh Final Report for the January 2002 Session

Mika Kasslin
TGh chair

TGh Agenda

- 11 meeting slots reserved, finally used 10 of them
 - start-up
 - TPC topics
 - New features and missing elements
 - DFS topics

Start-up

- Agenda approval, 02/021r1
- Approval of the Austin 2001 meeting minutes
- Co-editor selection, Andrew Myles (Cisco)
- Status in related matters
 - BRAN#26 report to TGh (01/663r0)
 - importance of the Harmonized Standard and open items in it

TPC

Discussion

- Message format changes
 - Power Constraint element
 - Power Capability element
- Transmit power and measurement tolerances
- Definitions of transmit and receive power

Decision

- Link margin field in the TPC Report mandatory

New Features, Missing Elements

Discussion

- Modified Action frame definition, 01/665r0
- Reason Code, Status Code
- Definition of new channels (5470-5725 MHz)

DFS, Regulatory

- Review of the draft Harmonized Standard
 - TPC requirements (max and max of min TxP)
 - DFS test
- Review of the JPT5G proposal on DFS framework
- Long, thorough and fruitful discussions on radar detection mechanism

⇒ Ad-hoc group drafted an 802.11h RLAN DFS proposal

⇒ Draft proposal reviewed and approved in joint RR/TGh meeting (RR-02/018A-d2)

DFS, Mechanism

Discussion

- IBSS, 01/532r0
- Use of containers

Meeting Summary

Didn't meet many of the original meeting objectives but most importantly we agreed on a common DFS proposal that

- will be communicated to ETSI/BRAN (provisional)
- will be used as the basis of the further work in TGh

Meeting minutes in 02/070

Follow-up discussion in TGh teleconferences

Wed, February 20th, 12:30pm (PST)

Wed, March 6th, 12:30pm (PST)

Dial-in number: +1-866-902-7870

Access code: 87654321

March 2002 Objectives

- Review results of the BRAN#27 meeting related to the 802.11h RLAN DFS proposal
 - revise the proposal if needed
- Decide on the DFS mechanism (draft D1.1 as basis)
- Address the remaining comments from LB29
- Revise the draft accordingly (especially the DFS part)
- Start new LB for revised draft

- 3.7.3.2. Minutes in document 070
- 3.7.3.3. Scheduling teleconferences are scheduled.

3.7.4. TGi – David Halasz

- 3.7.4.1. Report in document 02/036

TGi Final Report for the January 2002 Session

January 25, 2002

Tgi Final Report for the January 2002 Session

- Secretary: Frank Ciotti
- Motions
 - TKIP text from informational to normative, but optional: Passed
 - 802.1X Re-keying text as informational document 01/667. Passed
 - AES w/CNTR mode & CBC-MAC. Failed
 - Letter to IESG/IETF. Passed in TG & WG.
- Decided against going to letter ballot.
- Ad-Hoc meeting in Santa Barbara, on February 11th & 12th.

Next meeting objective

- Get Tgi draft text understandable and coherent.
- Go to letter ballot.

Slide 3

David Halasz, Cisco Systems, Inc.

3.7.4.2. Sent letter to IESG/IETF

3.7.4.3. Decided against going to letter ballot. Will work on LB for next meeting

3.7.4.4. Ad Hoc meeting in Santa Barbara Feb 11-12.

3.7.4.5. The draft is version 1.8

3.7.5. TGg – Matthew Shoemake

3.7.5.1. The WG chair officially thanks TI for hosting the Interim meeting, on behalf of the group.

3.7.5.2. Report in document 02/098

TGg Report to the IEEE 802.11 Working Group

Matthew B. Shoemake

TGg Chairperson

January 25, 2002

Status

- Heard multiple submissions related to the IEEE 802.11g Draft 1.1
- Topics of submissions include:
 - MAC interfacing parameters
 - RF performance requirements
 - Coexistence statement
- Documentation error notice:
 - An incorrect version of “Draft 1.1 in MS Word format without tracking” was placed on the web site and server. This has been corrected in both location. There was no error in the posting of “Draft 1.1 in PDF Format” or “Draft 1.1 in MS Word format with tracking”
- Draft 2.1 has been on server since 4:00pm on Wednesday the 23rd
- Draft 2.1 incorporates technical changes from 7 motions passed on the 22nd and 23rd
- Motions passed thus far are summarized on the remaining slides
 - Exact wording of the motions that passed is contained in the 802.11g minutes

Motion passed to instruct the editor to add text to section 9.6 as follows:

- “All Control frames shall be transmitted at one of the rates in the BSS basic rate set so that they will be understood by all STAs in the BSS. **For the IEEE 802.11g PHY, Control Response frames shall be sent at one of the Extended Rate PHY (ERP) mandatory rates in response to an OFDM frame as described below.**
- “To allow the transmitting STA to calculate the contents of the Duration/ID field, the responding STA shall transmit its Control Response and Management Response frames (either CTS or ACK) at the highest rate in the BSS basic rate set that is less than or equal to the rate of at the same rate as the immediately previous frame in the frame exchange sequence (as defined in 9.7). In addition, the Control Response frame shall be sent using the same PHY options as the received frame. **For the IEEE 802.11g PHY, if the received frame was sent at an OFDM rate, the Control Response frame shall be sent at the highest mandatory ERP rate that is less than or equal to the rate of the received frame.”**

Motion passed on aCWmin

- Instruct the editor to add a sub clause 19.4.3.8.5 specifying to use the table in sub clause 18.3.3 for the MAC timing calculation, with the following changes:
 - Use an aCWmin value of 15 unless in device is capable of rates greater than 20Mbps in which case 31 will be used
 - aMACProcessingDelay is < 2us

Motion passed to:

Add a new clause to 7.3.2 (7.3.2.last+1) containing the following text:

- The legacy indication element provides 802.11 stations with an indication of the presence of legacy stations in the BSS. See Figure xx. Stations may use this information to control their use of protection mechanisms (such as RTS / CTS) for OFDM frames. An Access Point shall generate this element in each Beacon Frame. The AP shall set bit 0 to a “0” if no 802.11b stations are associated. The AP shall set bit 0 to a “1” if any 802.11b stations are associated. The AP shall set bit 1 to the same value as bit 0 unless it is providing additional, optional information. If optional information is provided, it shall be according to this table:

Bit 0	Bit 1	Meaning
0	0	No 802.11b legacy stations are associated, and the AP suggests that protection mechanisms are not currently needed.
0	1	No 802.11b legacy stations are associated, but the AP recommends the use of protection mechanisms
1	0	802.11b legacy stations are associated, but the AP suggests that protection mechanisms are not currently needed.
1	1	802.11b legacy stations are associated, and the AP recommends the use of protection mechanisms

- *The editor is requested to assign a unique element ID.*
Figure xx: Legacy Indication Element

Element ID	Length =1	b0	b1	r	r	r	r	r	r	
One Octet	One Octet	B0						One Octet		B7

January 2002

doc.: IEEE 802.11-02/034r0

Motion passed on the signal extension for ERP/OFDM

- Add a sub clause 19.4.3.8.6 to state that the packet is followed by a Signal Extension Field which is quiet time (no carrier) of 6 microseconds.

Submission

Slide 6

Matthew B. Shoemake, TGg Chairperson

January 2002

doc.: IEEE 802.11-02/034r0

Motion passed to instruct the editor to change the TXtime equation for ERP/OFDM

- Change the Tmtime equation in 19.4.4.1 (which is currently a copy of the .11a definition) to add the 6 us Signal extension. The new equation would be:
 - $TXTIME = T PREAMBLE + T SIGNAL + T SYM$
 $*Ceiling((16 + 8 * LENGTH + 6) / N DBPS) + \text{Signal Extension}$
 - Where Signal Extension is defined as 6 microseconds.

Submission

Slide 7

Matthew B. Shoemake, TGg Chairperson

January 2002

doc.: IEEE 802.11-02/034r0

Motion passed on the signal extension for CCK-OFDM

- Change sub clause 19.6.2.4.1 to state that the Signal Extension is quiet time (no carrier).
- Change figure 19.6.2.4.1 to indicate that the Signal Extension is quiet time
- Change sub clause 19.6.2.4.5 to specify that the Signal Extension is quiet time.

Submission

Slide 8

Matthew B. Shoemake, TGg Chairperson

January 2002

doc.: IEEE 802.11-02/034r0

Motion Passed to Introduce Coexistence Statement

- Instruct the Editor to add the following text to the TGg draft standard:

The 2.45 GHz media is a shared media and co-existence with other devices such as IEEE 802.11b is an important issue for maintaining high performance in 802.11g devices. By design, 802.11g coexists with 802.11b and as a result coexists with all approved IEEE standards for the 2.45 GHz band. In addition, the mandatory and optional waveforms utilized by 802.11g are inherently robust against more general interference sources. Coexistence and interference protection is further enhanced by mechanisms in the existing MAC protocol including RTS/CTS, carrier sense and collision avoidance protocols, and MSDU fragmentation.

Submission

Slide 9

Matthew B. Shoemake, TGg Chairperson

Motion

- Move to forward Draft 2.1 of IEEE 802.11g to the IEEE 802.11 Working Group and request that an IEEE 802.11g Working Group Letter Ballot be issued on the draft immediately following the close of the January 2002 session.
- Zyren/Gummadi
- Passed 44-0-1

Objectives for March 2002

- Resolve letter ballot comments
- Issue a new letter ballot or a recirculation ballot
- Form a Sponsor Ballot pool for 802.11g

- 3.7.5.3. Submissions in document 02/097r1.
- 3.7.5.4. Current draft is version 2.1
- 3.7.5.5. Passed motions regarding CWmin and additional informational elements, and adding 6uS "quiet time" at end of OFDM.
- 3.7.5.6. Added coexistence statement.
- 3.7.5.7. Passed motion to forward draft 2.1 to Letter Ballot.
- 3.7.5.8. Will need to form sponsor ballot pool.
 - 3.7.5.8.1. The WG chair recommends that members sign up for sponsor pool at IEEE SA web site.
- 3.7.5.9. All motions passed have been incorporated into draft 2.1.
- 3.7.5.10. Q&A: Are all the technical issues closed? Some motions were left on the table, to be addressed at the next meeting. Also RX adjacent channel rejection is left for further consideration.

3.7.6. WNG – TK Tan

- 3.7.6.1. Report in 02/119r0

WNG SC
Closing report

T. K. Tan, Consultant
Bruce Kraemer, Intersil

WNG SC Agenda

- Tuesday
 - Updates (ETSI BRAN, MMAC)
 - Presentation/Discussion (HDR extension to 802.11a)
 - Call for participation for more submissions on HDR extension to 802.11a
- Wednesday
 - Joint regulatory meeting
 - Presentations – Boeing, Ericsson, Siemen
- Thursday
 - Presentation – radio resource measurements
 - Discussions – Next steps

Presentations

- Interest for HDR extensions to 802.11a - doc 02/081r0
- Regulatory Summary 02/016r1
- Integration of WLAN and Wide Area Mobile Networks - doc 02/106r0
- WLANs for Public Access – doc 02/107r0
- Next Generation Networking – doc 02/101r0

WNG SC Objectives –St Louis, MO, Mar 10-15, 2002

- **Review updates from previous ETSI BRAN HIPERLAN2 and IAG meeting**
- **Continue discussion on**
 - **Formation of a SG on HDR extension to 802.11a (collaboration with ETSI/BRAN, MMAC)**
 - **WLAN integration with Mobile networks (collaboration with ETSI/BRAN, MMAC)**
 - **Requirements for Next Generation WLANs and their implications on the standardization process**
 - **Multi-hop QoS**
 - **802.11 radio measurements**
- **Prepare for IEEE interim in May, ETSI BRAN & other interim meetings as needed**

- 3.7.6.2. Had first presentations on high rate 802.11a
- 3.7.6.3. Had presentation on radio resource measurements. A straw poll indicated strong interest in the subject.
- 3.7.6.4. Q&A -

3.7.7. Publicity – Al Petrick

- 3.7.7.1. report in document 117r0.

802.11/.15 Publicity Committee

Al Petrick- Bruce Kraemer 802.11

Jim Meyer 802.15

Meeting Objectives

- Nominate new chairs
- Update Conference Calendar
- Continue to Work on Joint 802.11 / 802.15 Publicity Activities
 - Website documents
 - Publicity announcements from the Task groups for IEEE
 - Establish process for generating 802.11 summary report for “media reporting”***
- Report from WECA

Call for Chairs

- Publicity Ad-Hoc committee Chair(s)
 - Co-Chaired by a representative from 802.11 and 802.15
 - Spearhead publicity activities of the group
 - Coordinate with WECA and other Industry forums
- Current Nominees
 - Brian Mathews 802.11
 - Kerry Greer - Co-Chair .11/.15
- Newly appointed chair Jim Meyer 802.15

WECA

- WECA appointed Dennis Eaton interim Chairman
- WECA kickoff a Technical Regulatory committee
 - Preparing for WRC-2003
 - Petition to FCC for NPRM to allow additional bandwidth in 5GHz band, consistent with European allocations
- Boston WECA meeting January 2002
 - Good discussion on upcoming standards from IEEE 802.11 and branding implications
 - Task group (Branding and Technology Roadmap) was formed to address new product “branding” supporting upcoming standards
- WECA board pass a motion to incorporate TKIP as a part of the WECA test suite, when it becomes available
- CES conference was very successful!!!!!!!
 - Over 300 media and press contacts
 - Briefed FTC and FCC commissioner, and US Congressman
 - Booth traffic was heavy.....

January 2002

doc.: IEEE 802.11-02/117r0

Call for Papers

- Communications Design Conference
 - Technical Advisor
 - Al Petrick, Vice-Chair 802.11
 - Email abstracts to apetrick@icefyre.com
 - Communications Design Conference
 - September 23-26, 2002
 - San Jose, Ca
 - Conference Tracks
 - Wireless LAN networking
 - Home Networking
 - Tutorials on OFDM
 - New developments in 802.11 and 802.15
 - Various cellular and broadband tracks
 - Abstracts due: Feb 20, 2002
 - Email abstracts to apetrick@icefyre.com
 - URL – www.comdesignconference.com

Submission

Slide 5

Al Petrick, Bruce Kraemer, Jim Meyer

January 2002

doc.: IEEE 802.11-02/117r0

Objective for March 2002

- Nominate new publicity chair for 802.11
- Update conference calendar
- Report from WECA March – Hong Kong meeting
- Generate document describing procedure for Task Group summary reporting for media and IEEE press announcements

Submission

Slide 8

Al Petrick, Bruce Kraemer, Jim Meyer

3.7.7.2. The 802.11 WG chair will also be visiting China, Hong Kong, and London presenting on 802.11 as well.

3.7.8. Liaison Reports

3.7.8.1. Liaisons do not have reports or are not present.

3.7.8.2. Discussion

3.7.8.2.1. There should be a liaison report between 802.11 and 802.15.2. The WG chair notes that the 802.15 chair will join us and comment later.

3.7.9. 802 Radio Regulatory – Vic Hayes

3.7.9.1. Report in RR 02/022

January 2002

doc.: IEEE 802.RR-02/022-r0

Closing report Radio Regulations to Radio Working Groups January 2002 meeting

Regulatory Ombudsman
(Vic Hayes)

<http://ieee802.org/Regulatory/>

Majordomo @majordomo.ieee.org subscribe stds-802-regs

Submission

Slide 1

Vic Hayes, Agere Systems

January 2002

doc.: IEEE 802.RR-02/022-r0

Documentation and Information

- Web site:
 - <http://ieee802.org/Regulatory/>
 - Member-only access codes are same as those for .11, .15 and .16
 - Please observe proprietary nature of those documents
- Reflector (e-mail distribution list)
 - Stds-802-regs@ieee.org
 - People on .11, .15 and .16 reflectors can apply to be added by sending a message to
 - Majordomo@majordomo.ieee.org
 - With the following line in the body of the message
 - subscribe stds-802-regs

Submission

Slide 2

Vic Hayes, Agere Systems

Objectives for Dallas, TX

- Comment resolution on rules change SEC Standing Committee Radio Regulations
- Comment resolution on rules change for Wireless PARs
- To prepare and submit other position statements if needed
 - e.g. Spectrum requirement 5 GHz band
 - e.g. 2.45 GHz regulations in China
 - e.g. French and UK Consultation document
- To hold joint meetings with TGh, WNG SC and TGg

Comment resolution on rules changes

- Reviewed summary of received comments
 - Doc.: RR-02-10 and RR-02-11
- SEC e-mail Ballot with received comments as guidance has been started
- Vic to tabulate the ballot results, attempt to resolve comments, and present the comments and proposed resolution
- Further action at next meeting

January 2002

doc.: IEEE 802.RR-02/022-r0

Spectrum requirement 5 GHz band ☺

- Liaison document to ETSI-BRAN to communicate required changes to the Liaison statement from JPT5G to ETSI-BRAN regarding DFS
- Doc.: RR-02/018d3 and 018Ad2

Submission

Slide 5

Vic Hayes, Agere Systems

January 2002

doc.: IEEE 802.RR-02/022-r0

RR/TGh motion ETSI-BRAN, re DFS

Agenda:

Date: January 24, 2002

Time: -14:20-

Motion by: StevensonSeconded by: Kuwahara

Moved: To request SEC to approve, in principle, the submission of doc.: RR-02/018-d3 and 018A-d2 to ETSI-BRAN.

To empower the Chairs of the Wireless Working Groups and the Regulatory Ombudsman to make final edits to harmonize the document according to the sentiments of the WGs.

To send a courtesy copy to MMAC

-802.15 tally: Approve 4, Do not approve 0, Abstaining 0

-802.11 tally: Approve 23, Do not approve 0, Abstaining 2

-802.16 tally: not present, meeting in Lapland

Submission

Slide 6

Vic Hayes, Agere Systems

2.45 GHz regulations in China



- Received a copy of the Test and analysis report from Bluetooth RegG
 - For internal use only
 - Doc. : RR-02/017
- Requires study and conversion to accommodate 100 mW RLANs
- Taking names and e-mail addresses from volunteers to help working between meetings
- Tele conference scheduled for February 14, 9 AM PST

Other subjects

- US JRG 8A-9B, submission from November meeting
 - Check status with Chair of US JRG 8A-9B
- Informative paper for members to respond to the French consultation for 2.4 and 5 GHz
 - Doc.: RR-02/020
- No time to review the UK Consultation documents
- Prepared preliminary comments on WECA petition as work in progress
 - Doc.: RR-02/021-d4
 - Plan is to work via rreg reflector to have mature input document at March meeting

Objectives for St. Louis, MO

- Seeking SEC approval of rules changes for SEC Standing Committee Radio Regulations and for Wireless PARs
- To prepare and submit other position statements if needed
 - e.g. Spectrum requirement 5 GHz band
 - e.g. 2.45 GHz regulations in China
 - e.g. Supportive comments on WECA petition
- To hold joint meetings with TGh, TGg and other TG's as required

3.7.9.2. TGg will have a joint meeting with RREG at the next meeting

3.7.9.3. Discussion – none

3.7.10. COEX “BOF” – Jim Lansford

3.7.10.1. Not present

3.8. Old Business

3.8.1. TGf – Dave Bagby

3.8.1.1. The TG chairs announces his intention is to have an electronic Ballot for this Letter Ballot

3.8.1.2. Motion: To conduct a working group letter ballot to forward 802.11f-D3 to sponsor ballot. Ballot is requested to complete before start of March 2002 meeting.

3.8.1.2.1. Moved Dave Bagby on behalf of TGf

3.8.1.2.2. Motion ID 332

3.8.1.2.3. Vote on the motion: passes 75:0:2

3.8.1.2.4. This will be Letter Ballot 32

3.8.2. TGg – Matthew Shoemake

3.8.2.1. Motion: Move to request that Draft 2.1 of IEEE 802.11g be sent to Working Group Electronic Letter Ballot immediately following the close of the January 2002 session

3.8.2.1.1. Moved Matthew Shoemake on behalf of TGg

3.8.2.1.2. Discussion

3.8.2.1.2.1. Is the draft complete? Yes, the draft could be used to build interoperable product. The areas that are left out would not affect implementation or interoperability. For example, the specifications of the receiver.

3.8.2.1.2.2. It could go to sponsor ballot as it is.

3.8.2.1.2.3. Would like to disagree – feels the draft is incomplete. It describes the physical layer part, but also proposes changes to the MAC. Changes to the MAC require changes to the state machines. Also, there is no

mechanism for the MIB changes needed. These are technical in nature, and are open. It does not meet the standards. Request the chair rule the motion out of order.

3.8.2.1.2.4. The WG Chair asks the TG chair to give a view of the completeness of the draft. The TG chair disagrees. This draft is complete in all significant area. The editor is working on the MIB. They will be available. We don't want to delay and waste 2 months.

3.8.2.1.2.5. A member has requested a ruling from the WG chair before debate on the motion continues.

3.8.2.1.2.6. The WG chair believes that the 802.11 TGg as an amendment to the 802.11 specification has to take that into account. The chair rules that the draft is not addressing other parts of the standard, and that the draft is not ready to letter ballot.

3.8.2.1.2.7. Point of order. The consultation with Bob O'Hara was out of order because he was acting as the parliamentarian and complainant.

3.8.2.2. Appeal the decision of the chair

3.8.2.2.1. Moved Jim Zyren

3.8.2.2.2. Second Matthew Shoemake

3.8.2.2.3. The chair moves to Al Petrick

3.8.2.2.4. Discussion

3.8.2.2.4.1. Reminds that there are special rules for discussion of an appeal. If someone acts as a parliamentarian or officer, if they take a position on an issue, they are disqualified. Second, the issues should have been raised in the Task Group. It could have been handled in the Task Group. It is disingenuous to bring it up at this time.

3.8.2.2.4.2. In favor of the appeal. There are a few undefined concepts. We don't have definitions of completeness from previous decisions. TGg is more than complete compared to other letter ballots. There is a question of consistency and fairness. Why has the expectations been changed at the last minute? Anything said here would apply to 802.11b. These same issues could be raised for 802.11b even today.

3.8.2.2.4.3. Wants to call a spade a spade. G wants to start a letter ballot. Feels this is an emotional reaction. Notes that Bob O'Hara was busy with other activities this week and could not attend TGg. Have not read the draft, but heard that there are still things to do. We are supposed to determine if the chair correctly interpreted the rules. In favor of the chair.

3.8.2.2.4.4. In favor of the appeal. There is no absolute standard for completeness or no open technical issues. There are still open issues with 802.11-1999. The question is whether an interoperable design can be built from the text. The text will never be to the point where it will not need interpretation. We need to move forward. We need to go to Letter Ballot.

3.8.2.2.4.5. Against the appeal in favor of the chair. Feels we have to go by the rules, and support the chair. It is possible to achieve what we want to achieve by having an "unofficial" letter ballot.

- 3.8.2.2.4.6. The draft is complete. There are issues, but it is complete enough for someone competent in the field to build a product. Roberts rules states that the parliamentarian must remain impartial. He should not have been able to approach the chair and privately express his opinion.
- 3.8.2.2.4.7. In favor of the appeal. We are trying to move forward. We have made every effort to keep this body informed as to what TGg was doing. There has been ample time to raise these issues at any time. The editor has done a lot of work. We don't want a small minority to slow down the whole group. The rights of the minority are adequately protected, and every comment will be addressed. This is a bad precedent to set.
- 3.8.2.2.4.8. In favor of the appeal. Open technical comments are a subjective matter. The group has to determine their own threshold of perfection. The purpose of the letter ballot is to resolve issues. It is by definition a tool to work out technical issues. The body has to decide to move forward.
- 3.8.2.2.5. Move to call the question.
- 3.8.2.2.5.1. John Fakatselis
- 3.8.2.2.5.2. Second Matthew Shoemake
- 3.8.2.2.5.3. Vote on calling the question. Fails 34:19:24.
- Call for orders of the day. The chair states that there is no break on the agenda at this time.
- 3.8.2.2.5.4. Recount: 54:14:14 Question is called.
- 3.8.2.2.6. Call for a Quorum:
- 3.8.2.2.7. Point of order – can the parliamentarian call for a quorum?
- 3.8.2.2.8. Bob O'Hara defers the parliamentarian role to Vic Hayes
- 3.8.2.2.8.1. Point of order – picking and choosing role of parliamentarian is inappropriate.
- 3.8.2.2.8.2. Objection to personal attacks
- 3.8.2.2.9. Recess for 5 minutes
- 3.8.2.2.9.1. The chair calls the meeting back to order at 10:30
- 3.8.2.2.9.2. The call for quorum is on the floor. A quorum is 50% of the voting membership. We need 133 voters for a quorum. At the last meeting, TGg was empowered to issue a letter ballot at this meeting.
- 3.8.2.2.9.2.1. Number of voters present: 87 voters are present. There is no quorum.
- 3.8.2.2.10. Point of order – the only actions allowed are gaining a quorum or adjourn.
- 3.8.2.2.11. The chair has checked with the vice chair and parliamentarian – and the only action is to adjourn
- 3.8.2.2.12. Point of order – When we had a quorum, we enabled this body to issue a letter ballot without a quorum. We set aside that rule to allow this motion to take place at this meeting. Asks for the ruling of the chair.
- 3.8.2.2.13. The chair rules that the only action is to adjourn.
- 3.8.2.2.14. Appeals the ruling of the chair
- 3.8.2.2.15. Matthew Shoemake
- 3.8.2.2.16. John Fakatselis

3.8.2.2.17. The parliamentarian advises the chair to adjourn because any vote will be invalid. If we make a decision it will be appealed at the SEC in the next meeting. Advise that we adjourn.

3.8.2.2.18. The mover desires to maintain the appeal.

3.8.2.2.19. The chair states that there is no quorum so no motions can be made.

3.8.3. The meeting is adjourned at 10:45AM

Attendance list for the meeting held at **Wyndham Anatole, Dallas, TX**

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Caspar (Settels)	aspirant	100	949 435 0627	3DSP	csettels@3dsp.com
Dr. Kim J. ()	aspirant	100	(760) 804-2416	Denso International America,	kim olszewski@densolabs.com
Mr. Steven Xu ()	aspirant	100	+86-25-6795588 Ext. 3039	Motorola	A13977@email.mot.com
Dr. Bernard Aboba (Bernard)	voter	100	+1 425 936 6605	Microsoft	bernarda@microsoft.com
Dr. Tomoko Adachi ()	voter	100	+81 44 549 2283	Toshiba Corporation	tomo.adachi@toshiba.co.jp
Dr. Brian G. Agee ()	aspirant	100	408 505 5851	Proteon Radio Networks	bgagee@proteanradio.net
Mr. Masaaki Akahane (Masa)	voter	100	+81 3 6409 3238	Sony Corporation	akahane@wcs.sony.co.jp
Mr. Areg Alimian ()	aspirant	100	408 326 2229	3Com Corporation	areg_alimian@3com.com
Mr. James G. Allen ()	aspirant	100	404-849-3251		jmallen@agere.com
Mr. Richard Allen (Dick)	voter	100	+1 408 974 5265	Apple Computer Inc.	rallen@apple.com
Mr. Keith Amann (Keith)	voter	100	+1 303 440 5330 x278	Spectralink	kamann@spectralink.com
Mr. Merwyn Andrade ()	aspirant	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
Mr. David C. Andrus ()	voter	100	+1 801 320 7654	3COM	david_andrus@3com.com
Dr. Kofi Anim-Appiah	aspirant	100	(214) 480-2034	Texas Instruments	kofi@ti.com
Mr. Mitch Aramaki (Michimas)	aspirant	100	(408) 861-3921	Panasonic Technologies, Inc.	aramaki@research.panason ic.com
Mr. Takashi Aramaki ()	voter	100	+81 468 40 5165	Panasonic	Takashi.Aramaki@yrp.mci. mei.co.jp
Mr. Larry Arnett ()	voter	100	+1 408 774 3179	Mitsubishi Electric & Electronics USA, Inc.	larnett@ieee.org
Mr. Drayt Avera ()	aspirant	100	+1 404 876 7707	RF Solutions	davera@rf-solutions.com
Dr. Geert Awater	aspirant	100	+31 30 609 7423	Agere Systems, Nederland	awater@lucent.com
Mr. David Bagby	voter	100	+1 408 326 3762	3Com Corporation	david_bagby@3com.com
Mr. Bala Balachander	aspirant	100	(650) 475 1978	Woodside Networks	bala@woodsidenet.com
Mr. John Balian ()	aspirant	100	(508) 460-7888 x20	Accton Technology Corporation	john_balian@accton.com
Mr. Simon Barber ()	voter	100	415 577 5523	Instant 802 Networks, Inc.	simon@instant802.com
Mr. Gil Bar-Noy ()	voter	100	+972 9 743 9701 ext 200	Envara	gilb@hlan.com
Dr. Anuj Batra (Anuj)	voter	100	+1214 480 4220	Texas Instruments Incorporated	batra@ti.com
Mr. Roger Bengtsson	aspirant	100	+46 40 10 51 62	Telia Research	roger.l.bengtsson@telia.se
Mr. Simon Black (Simon)	voter	100	+44 778 677453	Qosine Ltd.	simon.a.black@nokia.com
Mr. Timothy Blaney ()	voter	100	+1 530 478 5606	Commcepts	tim@commcepts.net
Mr. Jan Boer (Jan)	voter	100	+31 30 609 7483	Agere Systems, Nederland	janboer@agere.com
Mr. John Bowne ()	aspirant	100	(503) 627-3265	Rohde & Schwarz, Inc.	rohde-schwarz.com
Mr. Ronald Brockmann (Ronald)	voter	100	+31 30 229 6081	Intersil N.L. B.V.	rbrockma@intersil.com
Mr. Kevin Burak ()	voter	100	+1 508 851 8238	Motorola	Kevin.Burak@Motorola.com
Dr. Alistair G. Buttar ()	voter	100	+41 22 7991 243	Motorola	alistair.buttar@motorola.co
Mr. Pete Cain ()	aspirant	100	+44 (0) 131 335 7214	Agilent Technologies UK Limited	peter_cain@agilent.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. Colum Caldwell (Colum)	voter	100	+353 1 677 9555	Supergold Communication, Ltd	colum.caldwell@supergold.com
Ms. Nancy Cam-Winget ()	voter	100	+1 408 773 5317	Atheros Communications, Inc.	nance@winget.net
Mr. Bill Carney ()	voter	100	+1 707 521 3069	Texas Instruments	bcarney@ti.com
Mr. Michael Carrafiello	voter	100	978 684 1552	Enterasys Networks, Inc	carrafie@enterasys.com
Mr. Pat Carson (Pat)	voter	100	+1 408 467 5218	TDK Corporation	pcarson@tdktca.com
Dr. Hyokang Chant ()	aspirant	100	(301) 468-9487	Combasis Technology, Inc	hkchang@combasis.com
Mr. Clint Chaplin ()	aspirant	100	(408) 528-2766	Symbol Technologies Inc.	cchaplin@sj.symbol.com
Mr. Albert Chen ()	aspirant	100	(408) 573-7676	ALinks Communications Inc	alchen1@yahoo.com
Mr. Michael Chen ()	aspirant	100	949 435 0565	3DSP	mchen@3dsp.com
Dr. Greg Chesson ()	voter	100	+1 408 773 5258	Atheros Communications, Inc.	greg@atheros.com
Mr. Harshal S. Chhaya ()	voter	100	(214) 480-6995	Texas Instruments	hchbaya@ti.com
Mr. Alan Chickinsky ()	voter	100	+1 703 633 8300	TASC	achickinsky@tasc.com
Dr. Charles Chien ()	aspirant	100	(310) 581-1650 ext	G-Plus, Inc.	chariest@g-plus.net
Dr. Aik Chindapol ()	voter	100	+1 858 521 3546	Siemens	aik.chindapol@icn.siemens.com
Mr. Leigh Chinitz ()	aspirant	100		Proxim	lchinitz@proxim.com
Dr. Leigh M. Chinitz ()	aspirant	100	(408) 731-2853	Proxim	lchinitz@proxim.com
Dr. Sunghyun Choi (Sunghyun)	voter	100	+1 914 945 6506	Philips Research	szc@philabs.research.philips.com
Mr. Wingert Christopher ()	aspirant	100	(858) 658-4428	Qualcomm	cwingert@qualcomm.com
Mr. Frank Ciotti ()	voter	100	+1 (281) 298-9922	LinCom Wireless	ciottif@lincom.com
Mr. Richard Clayton ()	aspirant	100	443 259 2390	Network Associates	richard_clayton@nai.com
Mr. Ken Clements	voter	100	+1 408 353 5027	Innovation on Demand, Inc.	ken@innovation-on-demand.com
Dr. John T. Coffey ()	voter	100	+1 707 284 2224	Texas Instruments	coffey@ti.com
Mr. Terry Cole ()	aspirant	100	512 602 2454	AMD	terry.cole@amd.com
Mr. Craig Conkling (Craig)	aspirant	100	+1 408 474 5306	Philips Semiconductors, Inc.	craig.conkling@philips.com
Dr. Todor Cooklev ()	voter	100	+1 781 687 0682	Aware, Inc.	tcooklev@aware.com
Mr. Thomas P Costas	aspirant	100	(978) 685-6100 x801	Global Communication Devices, Inc.	thomas.costas@gcdchips.com
Mr. Wm. Caldwell Crosswy (Caldwell)	voter	100	+1 281 514 2774	Compaq Computer Corporation	caldwell.crosswy@compaq.com
Mr. Russell J. Cyr ()	aspirant	100	978-929-9889	Engim, Inc.	russell@engim.com
Mr. Russell J. Cyr ()	aspirant	100	978 206 3474	Engim, Inc.	russell@engim.com
Mr. Rolf De Vegt ()	aspirant	100	+1 650 780 5846	Woodside Networks	rolf@woodsidenet.com
Mr. Peter de Wit ()	voter	100	+31 (0) 46 442 2192	TDK Systems, Ltd.	peter de wit_tdk@compuserve.com
Mr. Michael Derby (R.)	voter	100	858 864 5930		mikederby22@yahoo.com
Mr. Wim Diepstraten (Wim)	voter	100	+31 30 609 7482	Agere Systems, Nederland	wdiepstraten@agere.com
Mr. James Doyle ()	aspirant	100	416 646 2000	Vixs	jdoyle@vixs.com
Dr. Eryk Dutkiewicz ()	voter	100	+61 2 9666 0644	Motorola Labs	Eryk.Dutkiewicz@motorola.com
Ms. Mary DuVal ()	voter	100	+1 972 575 2330	Texas Instruments Incorporated	m-duval@ti.com
Mr. Donald E. Eastlake III ()	aspirant	100	508-851-8280	Motorola Labs	Donald.Eastlake@motorola.com

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Dennis Eaton ()	voter	100	+1 321 729 4178	Intersil Corporation	deaton@intersil.com
Mr. Peter Ecclesine (Peter)	voter	100	+1 408 527 0815	Cisco Systems Inc.	petere@ieee.org
Mr. Jon Edney ()	voter	100	+44 1223 423 123	Qosine Ltd.	jon.edney@ntlworld.com
Mr. Jack Ehrhardt ()	aspirant	100	(804) 965-5455	Philips Electronics North America Corporation	Jack.Ehrhardt@philips.com
Mr. Greg Ennis (Greg)	aspirant	100	+1 408 358 5544	WECA	gennis@mindspring.com
Mr. Javier Espinoza (Harvey)	voter	100	+1 408 467 5230	TDK Corporation	HEspinoza@tdkta.com
Mr. Christoph Euscher ()	aspirant	100	+49 2871 91 2861	Siemens	christoph.euscher@siemens.com
Mr. John Fakatselis (John)	voter	100	+1 321 729 4733	Intersil Corporation	jfakat01@intersil.com
Mr. Augustin J. Farrugia ()	voter	100	650 654 2935	Gemplus	augustin.farrugia@gemplus.com
Dr. Weishi Feng ()	voter	100	+1 408 222 1922	Marvell Semiconductor	weishifeng@yahoo.com
Mr. Niels T. Ferguson ()	aspirant	100	+31 20 463 09 77	MacFergus	niels@ferguson.net
Dr. Gerhard Fettweis ()	aspirant	100	+49 351 80800 30	Systemonic AG	gerhard.fettweis@systemonic.de
Mr. Matthew James Fischer (Matt)	voter	100	+1 408 543 3370	BroadCom Corporation	mfischer@broadcom.com
Mr. Michael Fischer (Michael)	voter	100	+1 210 614 4096	Intersil	mfischer@choicemicro.co
Mr. Jason Flaks	voter	100	+1 415 558 0373	Dolby Laboratories Inc	jsf@dolby.com
Mr. Brian Forde ()	aspirant	100	+353-1-291 1 00	Silicon & Software Systems	brian.forde@s3group.com
Mr. Robin Frye ()	aspirant	100	(972) 317-0407	Modus Operandi, Inc.	modus@operandi.com
Mr. Toshihiro Fujita ()	aspirant	100	+81 3 5795 5778	Sony Corporation Mobile Network Company	sukechan@sm.sony.co.jp
Mr. Shinya Fukuoka ()	aspirant	100		Pioneer Corporation	s-fuku@crdl.pioneer.co.jp
Mr. Marcus Gahler (Marcus)	voter	100	+1 425 603 0900 x117	NextComm, Inc	mgahler@nextcomm.com
Mr. James Gardner ()	voter	100	+1 650 780 5858	Woodside Networks	jamesgardner@woodsidenet.com
Mr. Sanchin Garg ()	aspirant	100	908 696 5114	Avaya Inc.	sgarg@avagya.com
Mr. Tim Godfrey (Tim)	voter	100	+1 913 706 3777	Intersil	tgodfrey@choicemicro.com
Mr. Andrew J. Gowans ()	voter	100	+44 20 7211 0309	Wyndham House	radcom53@dircon.co.uk
Mr. Rik Graulus ()	voter	100	(408) 436-3939	Resonext	rik.graulus@resonext.com
Mr. Evan Green	voter	100	+1 503 264 8456	Intel Corporation	evan.r.green@intel.com
Mr. Larry Green ()	aspirant	100	805-879-1520	Communication Machinery Corporation	green@cmc.com
Mr. Patrick Green ()	voter	100	+1 408 749 4948	Advanced Micro Devices	patrick.green@amd.com
Mr. Kerry Greer ()	aspirant	100	+1 321 308 6618	SkyCross	kerry.greer@skycross.com
Dr. Daqing Gu ()	voter	100	+1 908 665 1200 Ext 25	Mitsubishi Electric	dgu@merl.com
Mr. Srikanth Gummadi ()	voter	100	+1 707 284 2209	Texas Instruments	sgummadi@ti.com
Dr. Fred Haisch ()	aspirant	100	(678) 924-6600	Agere	haisch@agere.com
Mr. David Halasz (David)	voter	100	+1 330 664 7389	Cisco Systems, Inc	dhala@cisco.com
Dr. Steve D. Halford	voter	100	+1 321 729 5130	Intersil Corporation	shalford@intersil.com
Mr. Neil Hamady ()	voter	100	408 441 3359	Resonext	neil.hamady@resonext.co
Mr. Mark Hamilton ()	aspirant	100		3COM Corporation	mark_hamilton@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>
Mr. Mark Hamilton ()	aspirant	100		3Com Corporation	mark_hamilton@3com.com
Dr. Robert E Hancock	aspirant	100	+44 (0) 1794 833601	Roke Manor Research	mberth.hancock@roke.co.uk
Dr. Christopher J. Hansen (Chris)	voter	100	+1 408 543 3378	BroadCom Corporation	chansen@broadcom.com
Mr. Yasuo Harada (Yasuo)	voter	100	+ 81 6 6900 9177	Matsushita Electric Industrial Co. Ltd.	yasuo@isl.mei.co.jp
Dr. Amer A. Hassan ()	voter	100	+1 425 705 9590	Microsoft	amerh@microsoft.com
Mr. Victor Hayes (Vic)	voter	100	+31 30 609 7528	Agere Systems, Nederland	vichayes@agere.com
Dr. Chris Heegard (Chris)	voter	100	+1 707 521 3062	Texas Instruments	heegard@ti.com
Mr. Robert Heile (Bob)	voter	100	+1 508 222 1393	GTE Internetworking Technologies	bheile@ieee.org
Mr. Bent Hessen-Schmidt ()	aspirant	100	(613) 820-9244 x223	SiGe Semiconductor	bhs@sige.com
Dr. Garth Hillman ()	voter	100	+1 512 602 7869	AMD	garth.hillman@amd.com
Mr. Christopher Hinsz ()	voter	100	+1 408 528 2452	Symbol Technologies Inc.	chinsz@sj.symbol.com
Mr. Jin-Meng Ho (Jin-Meng)	voter	100	+1 214 480 1994	Texas Instruments	jinmengho@ti.com
Mr. James Hobza ()	aspirant	100	(858) 453-8400 x353	Wicom	jhobza@widcomm.com
Mr. Maarten Hoebe (Maarten)	voter	100	+31 30 229 6083	Intersil B.V.	maarten.hoebe@intersil.com
Mr. Michael Hoghooghi ()	voter	100	+1 (301) 444-8834	Motorola	emh002@email.mot.com
Mr. Sukkyun Hong ()	aspirant	100	82-2-2167-1213	GCT Semiconductor, Inc.	rsv@gctsemi.com
Mr. Russell Housley (Russ)	aspirant	100	703-435-1775	RSA Laboratories	rhousley@rsasecurity.com
Dr. Dave Hudak ()	aspirant	100	614 822 5275 ext. (970) 547-8371	Karlnet, Inc. Technology Solutions	DHudak@Karlnet.com john_m_hughes@msn.com
Mr. Grant Hulse ()	aspirant	100	(858) 546-2401 X 210	RF Magic, Inc.	grant.hulse@rfmagic.com
Mr. David Hunter ()	voter	100	+1 805 687 2885	Time Factor	hunter@timefactor.com
Mr. Keith Huntington ()	aspirant	100	(508) 366-7800 ext. 107	Insyde Software, Inc.	ieee-kjh@wizardfish.com
Mr. David Hytha ()	voter	100	+1 858 404 6588	Silicon Wave	dhytha@siliconwave.com
Dr. Hiroshi Ide ()	aspirant	100	310 616 1434	Melco	ide@buffalotech.com
Mr. Katsumi Ishii (Kirk)	voter	100	+1 408 988 4515	JVC	kirk@jvclub.com
Mr. David P. Jablon ()	aspirant	100	(781) 551-5067	Phoenix Technologies Ltd.	dpj@world.std.com
Mr. Marc Jalfon ()	voter	100	+972 4 8655006	Intel Israel (74) Ltd.	marc.jalfon@intel.com
Mr. Hemaprabhu Jayanna ()	aspirant	100	(916) 356-7386	Intel Corporation	hemaprabhu.jayanna@intel.com
Dr. Jung Je Son ()	voter	100	82-31-779-6533	Samsung	jaggy@samsung.com
Dr. Ho-In Joen ()	aspirant	100	82-31-750-5321	Kyung-WON University	hijeon@mail.kyungwon.ac.kr
Mr. Habetha Joerg ()	aspirant	100	49 247 6003 560	Philips	joerg.habetha@philips.com
Ms. Sherry Johnson ()	aspirant	100	+ (630) 529-1029 x15/	Cybiko, Inc.	sherry_j@cybiko.com
Mr. Doug Jones ()	aspirant	100	(978) 749-9999 ext: 226	YAS Corporation	doug@yas.com
Dr. VK Jones ()	voter	100	+1650.475.1915	Woodside Networks	vkjones@woodsidenet.com
Mr. Mark F. Kahn ()	aspirant	100	(925) 785-4909	Proteon Radio Networks	kahn@proteanradio.net
Dr. Srinivas Kandala (Sri)	voter	100	+1 360 834 8696	Sharp Laboratories of America,	sri@sharplabs.com
Dr. Jeyhan Karaoguz (Jeyhan)	nearly voter	100	+1 949 585 6168	Broadcom Corporation	jeyhan@broadcom.com
Mr. Kevin Karcz (Kevin)	voter	100	+1 603 862 1008	University of New Hampshire	kjk@unh.edu

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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. Scoff Kasin ()	aspirant	100	(512) 602-8531	AMD	Scott.Kasin@amd.com
Mr. Mika Kasslin (Mika)	voter	100	+358 7180 36294	Nokia Research Center	mika.kasslin@nokia.com
Mr. Stuart J. Kerry (Stuart)	voter	100	+1 408 474 7356		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. Dongkyu Kim ()	aspirant	100	82-31-200-3655	Samsung Electronics	donq@samsung.com
Mr. Edward Kim ()	aspirant	100	(408) 946-5440 Ext)222	Telecis, Inc.	edward@TeleCIS.com
Dr. Je Woo Kim ()	voter	100	(408) 946-5440 Ext)221	Telecis, Inc.	jewkim@TeleCIS.com
Mr. Steve Kim ()	aspirant	100	770 263 2545	RF Solutions	skim@rf-solutions
Mr. Sunny Kim ()	aspirant	100	+82 31-210 5529	Samsung	sunnykim2@samsung.com
Mr. Ziv Kimhi ()	aspirant	100	(415) 920-9214	Instant802 Networks, Inc.	ziv@instant802.com
Dr. Günter Kleindl ()	aspirant	100	43 51707 35738	Siemens	guenter.kleindl@siemens.at
Mr. Mark Klerer ()	aspirant	100	(908) 997-2069	Flarion Technologies, Inc.	m.klerer@fiarion.com
Mr. Cees Klik ()	aspirant	100	+31 35 689 4106	Philips	Cees.Klik@philips.com
Mr. David Kline ()	aspirant	100	(541) 715-7607	Hewlett-Packard Company	dave kline2@hp.com
Mr. Juergen Kockmann ()	aspirant	100	+49 (2871) 91-2066	Siemens	juergen.kockmann@bch.siemens.de
Mr. Philip S. Kossin ()	aspirant	100	(310) 202-0252 Ext. 103	Intrinsix Corp.	pkossin@intrinsix.com
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	+1 321 729 5683	Intersil Corporation	bkraemer@intersil.com
Dr. Thomas Kuehnel ()	voter	100	+1 650 693 2820	MicroSoft	kuehnel@cctl.nj.nec.com
Dr. Geng-Sheng Kuo ()	voter	100	+886 2 8661 7453	National Chengchi University	gskuo@ieee.org
Mr. Denis Kuwahara (Denis)	voter	100	+1 425 957 5366	Boeing	denis.kuwahara@boeing.com
Mr. Jagannatha L.V. ()	aspirant	100	(678) 924-6534	Agere	jagannath@agere.com
Mr. Jason Lam ()	aspirant	100	(408) 764-9427	Fujitsu	jlam@fujitsupc.com
Mr. David S. Landeta (David)	voter	100	+1 407 729 5540	Intersil Corporation	dlandeta@intersil.com
Dr. Jim Lansford (Jim)	voter	100	+1 405 377 6170	Mobilian Corporation	jim.lansford@mobilian.com
Mr. Colin Lanzl ()	voter	100	781 687-0578	Aware, Inc.	clanzl@aware.com
Mr. Jon LaRosa ()	aspirant	100	(603) 430-7710 x12	Meetinghouse Data Communications	jal@mtghouse.com
Mr. Jon A. LaRosa ()	aspirant	100		Meetinghouse Data Comm	jal@mtghouse.com
Mr. Peter Larsson ()	voter	100	+46 8 764 14 30	Ericsson Radio Systems AB	peter.larsson@era.ericsson.se
Mr. David J. Leach, Jr. ()	voter	100	+1 210 614 4096 x114	Intersil	dleach02@intersil.com
Mr. K.C. Lee ()	aspirant	100	82-31-200-3122	Samsung	kcleee@samsung.com
Mr. Martin Lefkowitz ()	voter	100	707 284 2202	Texas Instruments	lefko@ti.com
Mr. Onno Letanche ()	voter	100	+31 30 6097 454	Agere Systems	oletanche@agere.com
Dr. Jie Liang ()	voter	100	(214) 480-4105	Texas Instruments Incorporated	jliang@ieee.org
Mr. Jae-Woo Lim ()	aspirant	100		MIC Radio Research Lab	jwlim@rrl.go.kr
Mr. Titus Lo ()	voter	100	+1 425 603 0900	NextComm, Inc	titus.lo@ieee.org

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Peter Loc ()	voter	100	+1 408 222 1951	Marvell	ploc@marvell.com
Mr. Fernando López-de-Victoria ()	aspirant	100	(408) 725-8070 Ext. 22	Ralink	femando@ralinktech.com
Mr. David Lucia ()	aspirant	100	(978) 443-1795	Azimuth Networks, Inc	david_lucia@azimuth.net
Dr. Yeong-Chang Maa	voter	100	+886-3-516-5106 ext. 201	IPC	ycmaa@inprocomm.com
Mr. Mahalingam Mani ()	aspirant	100	(408) 404-1330	Avaya Inc.	mmani@avaya.com
Mr. Naotaka Maruyama ()	aspirant	100	81 466 29 6268	Netcleus Systems Corp	maotake_maruyama@netcleus.co.jp
Mr. Conrad Maxwell ()	voter	100	+1 949 483 7819	Conexant Systems, Inc.	conrad.maxwell@conexant.com
Dr. Ron McCallister ()	voter	100	480 607 4831	Intersil Corporation	rmccalli@intersil.com
Mr. Justin McClann ()	aspirant	100	(614) 822-5275 ext. 105	Karlnet, Inc.	jmccann@karlnet.com
Mr. Kelly McClellan ()	voter	100	+1 949 428 4157	Valence	kpm@valencesemi.com
Mr. Gary McGarr ()	voter	100	+ 1 281 829 3706	Atheros Communications, Inc.	gmcgarr@atheros.com
Mr. Bill McIntosh ()	voter	100	813 288 7388 X117	Fortress Technologies	bmcintosh@fortresstech.com
Mr. Jorge Medina ()	aspirant	100	(407) 829-4440	Direct2Data Technologies	jorgem@d2d.com
Mr. Pratik Mehta ()	voter	100	+1 512 723 6214	Dell Computer Corporation	Pratik_Mehta@Dell.com
Mr. Robert C. Meier ()	voter	100	+1 330 664 7850	Cisco Systems, Inc.	rmeier@cisco.com
Dr. Klaus Meyer ()	voter	100	+49 351 277 6063	AMD	klaus.meyer@amd.com
Mr. Reiner Mim (Reiner)	aspirant	100	+1 408 731 2768	Troy Group, Inc	Reiner95051@aol.com
Mr. Partho Mishra ()	voter	100		Woodside Networks	parthomishra@woodsidenet.com
Mr. Fanny Mlinarsky ()	aspirant	100	(978) 443-1795	Azimuth	fanny_mlinarsky@azimuth.net
Mr. Sanjay Moghe ()	aspirant	100	(404) 876-7707	RF Solutions	smoghe@rf-solutions.com
Dr. Anton Monk ()	aspirant	100	(858) 625-3201		amonl@entropic-communications.com
Mr. Leo Monteban ()	voter	100	+31 30 609 7526	Agere Systems, Nederland	monteban@agere.com
Mr. Tim Moore (Tim)	voter	100	+1 425 703 9861	Microsoft	timmoore@microsoft.com
Mr. Mike Moreton ()	aspirant	100	+44 (0) 118 9131 500	Synad Technologies Limited	mmoreton@synad.com
Mr. Robert Moskowitz (Bob)	voter	100	+1 248 968 9809	TruSecure Corporation	rgm@trusecure.com
Mr. Willem Mulder ()	voter	100	+31 30 609 7504	Agere Systems, Nederland	wmulder@agere.com
Dr. Peter Murphy ()	aspirant	100	(707) 521-3073	Texas Instruments	murphy@ti.com
Mr. Peter Murray	voter	100	+1 908 232 9054		pmurray99@comcast.net
Mr. Andrew Myles ()	voter	100	+61 2 84461010	Cisco Systems	andrew.myles@cisco.com
Dr. Ravi Narasimhan ()	voter	100	+1 408 522 2315	Marvell Semiconductor, Inc.	ravin@marvell.com
Dr. Kevin Negus ()	aspirant	100	(408) 731-2778	Proxim	kevin@proxim.com
Mr. David B. Nelson ()	aspirant	100	(978) 684-1330	Enterasys Networks, Inc	dnelson@enterasys.com
Mr. Dan Nemits ()	voter	100	+1 707 284 2275	Texas Instruments	dnemits@ti.com
Dr. Chiu Ngo ()	voter	100	+1 914 945-6475	Philips Research	chiu.ngo@philips.com
Mr. Henry Nielsen ()	aspirant	100	(541) 754-8192	STMicroelectronics, Inc.	henry.nielsen@st.com
Mr. Toshi Nishida ()	aspirant	100	(408) 361-6517	Alaps	toshi.nishida@alps.com
Mr. Gunnar Nitsche ()	voter	100	+49 351 808 0054	Systemonic AG	Gunnar.Nitsche@systemonic.de
Mr. Erwin R. Noble (Erwin)	voter	100	+1 408 617 4768	Philips Components	erwin.noble@philips.com
Mr. Ivan Oakes ()	voter	100	+44 1223 421025	Tality	ifo@tality.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. Timothy O'Farrell	voter	100	+1 353 1 677 9555	Supergold Communication, Ltd	tim.ofarrell@supergold.com
Mr. Bob O'Hara (Bob)	voter	100	+1 (408) 986-9596	Informed Technology Inc.	bob@bstormnetworks.com
Mr. Yoshihiro Ohtani ()	voter	100	81-743-65-4529	Sharp Corporation	ohtani@slab.tnr.sharp.co.jp
Mr. Lior Ophir ()	aspirant	100	(972) 9 970-6542	Texas Instruments	lior.ophir@ti.com
Dr. Ian Oppermann ()	aspirant	100	+61 2 9519 8227	Southern Poro Communication	lanO@southern-poro.com
Mr. Toshikuni Osogoe ()	aspirant	100		Net Cleus	toshikuni_osogoe@netcleus.co.jp
Mr. Dirk Ostermiller (Dirk)	voter	100	+1 801 617 2511	MicroLinear	dirko@xmission.com
Mr. Richard H. Paine (Richard)	voter	100	+1 425 865 4921	The Boeing Company	richard.h.paine@boeing.co
Mr. Mike Paljug (Mike)	voter	100	+1 321 729 5528	Intersil Corporation	mpaljug@intersil.com
Dr. Carl Panasik ()	aspirant	100	(214) 480-6785	Texas Instruments	panasik@ti.com
Mr. Subra	aspirant	100	+1 408 721 8216	Bergana Communications	tps@bergana.com
Parameswaran (Subra)					
Mr. Gregory Parks (Greg)	voter	100	+1 916 939 9400 X3211	Sharewave Inc.	greg.parks@sharewave.co
Mr. Gavin Parnaby ()	aspirant	100	(858) 677-9967	National Semiconductor Corporation	Gavin.Parnaby@nsc.com
Ms. Lizy Paul ()	voter	100	301 444 8861	Motorola	Lizy.Paul@motorola.com
Mr. Sebastien Perrot ()	voter	100	+33 2 99 27 3965	Thomson Multi Media	perrots@thmulti.com
Mr. Al Petrick (Al)	voter	100	+1 321-235-3423	IceFyre Semiconductor	apetrick@icefyre.com
Mr. James Portaro ()	aspirant	100	(304) 379-9328	Neteam	jimp@neteam.net
Mr. Al Potter ()	aspirant	100	(717) 241-3425	ICSA-Labs	apotter@icsaLabs.com
Mr. Satish Premanathan ()	aspirant	100	(408) 557-4400	Wipro	satish.premanathan@wipro.com
Mr. Mike Press (Mike)	voter	100	+1 336 931 7338	RF Micro Devices Inc.	mpress@rfmd.com
Dr. Henry Ptasinski ()	aspirant	100	(408) 543-3316	Broadcom Corporation	henryp@broadcom.com
Mr. Ali Raissinia ()	voter	100	+1 650 780 5847	Woodside Networks	ali@woodsidenet.com
Mr. Noman Rangwala ()	voter	100	+1 415 661 1794	Analog Devices	noman.rangwala@analog.com
Dr. David Reed (E.)	voter	80	+1 720 304 9050 x203	Channel Technology	daver@channel-tech.com
Mr. Ivan Reede (Ivan)	voter	80	+1 514 620 8522	AmeriSys Inc.	i_reede@amersys.com
Dr. Stanley A. Reible (Stan)	voter	100	+1 978 589 9864	Oak Wireless	reible@compuserve.com
Mr. Danny Rettig ()	voter	100	+972 4 865 5579	Intel	dany.rettig@intel.com
Mr. Edward Reuss ()	aspirant	100	(831) 458-7483	Plantronics, Inc.	ed.reuss@plantronics.com
Mr. David Richkas ()	voter	100	+1 858 385 4129	Intel	dave.richkas@intel.com
Mr. Carlos A. Rios (Carlos)	voter	100	+1 408 202 0294	RiosTek	carlos@riostek.com
Mr. Benno Ritter ()	voter	100	+1 408 474 5115	Philips Semiconductors	Benno.Ritter@philips.com
Mr. Kent G. Rollins (Kent)	voter	100	+1 407 829-4440	Direct2Data Technologies	kentr@d2d.com
Dr. Stefan Rommer ()	aspirant	100	+46 31 344 60 33	Ericsson Mobile Data Design AB	Stefan.Rommer@erv.ericsson.se
Mr. Jon Rosdahl ()	voter	100	+1 801 617 2508	MicroLinear	jrosdahl@ieee.org
Mr. Pejman Roshan ()	aspirant	100	(949) 823-1464	Cisco Systems, Inc.	pejman@cisco.com
Mr. Rob Roy ()	voter	100	+1 503 681 8600 Ext 225	Mobilian Corporation	rob.roy@mobilian.com
Mr. Gunnar Rydnell (Gunnar)	voter	100	+46 31 344 63 20	Ericsson Mobile Data Design AB	gunnar.rydnell@erv.ericsson.se

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Mr. Kenichi Sakusabe ()	voter	100	+81 3 5435 3698	Sony Corporation Semiconductor Network	sakusabe@mosk.semicon. sony.co.jp
Mr. Anil K. Sanwalka (Anil)	voter	100	+1 416 754 8007	Neesus Datacom, Inc	anil@neesus.com
Mr. Kurt Sauter ()	aspirant	100	(650) 475-1904	Woodside Networks	kurtsauter@woodsidenet.com
Mr. Edward Schell ()	aspirant	100	(609) 520-0071	Hitachi America, Ltd.	edward.schell@dmsl.hitachi .com
Mr. Sid Schrum (Sid)	voter	100	+1 919 463 1043	Texas Instruments	sschrum@ti.com
Dr. Erik Schylander ()	voter	100	+31 40 27 35585	Philips	erik.schylander@philips.co
Mr. Michael Seals ()	voter	100	+1 321 724 7172	Intersil Corporation	mseals@intersil.com
Mr. Joe Sensendorf ()	voter	100	408 974 1476	Apple Computer Inc.	joes@apple.com
Mr. Ankur Shah ()	aspirant	100	(916) 356-9131	Intel Corporation	ankur.n.shah@intel.com
Mr. Rick Shaw ()	voter	100	+1 801 617 2560	Micro Linear	shaw.rick@microlinear.com
Mr. Yangmin Shen ()	aspirant	100	(309) 692-8712	Symbol Technologies Inc.	sheny@sj.symbol.com
Mr. Matthew Sherman (Matthew)	voter	100	+1 973 236 6925	AT&T Labs	mjs Sherman@att.com
Dr. Matthew B. Shoemake (Matthew)	voter	100	+1 214 480 2344	Texas Instruments Incorporated	shoemake@ti.com
Dr. William Shvodian (Bill)	voter	100	+1 703 269 3047	XtremeSpectrum	bshvodian@xtremespectru m.com
Dr. Sandeep K. Singhal ()	aspirant	100	(201) 548-2629	ReefEdge, Inc.	sandeep@reefedge.com
Mr. Donald I. Sloan (Don)	voter	100	+1 330 664 7917	Cisco Systems, Inc.	dons@cisco.com
Mr. Kevin Smart ()	voter	100	+1 801 617 2507	MicroLinear	keltypack@networld.com
Mr. Dave Smith ()	voter	100	916 785 2639	Hewlett-Packard	dave_smith4@hp.com
Mr. H. Keith Smith ()	nearly voter	100	760 710 3051	Ellipsis Digital Systems	hksmith@ieee.org
Mr. Wendell Smith ()	aspirant	100	512-437-4678	Vixs	wsmith@vixs.com
Mr. Wei-Jei Song ()	aspirant	100	949 435 0604	3DSP	wsong@3dsp.com
Dr. Amjad Soomro ()	voter	100	+1 914 945 6319	Philips Research	amjad.soomro@philips.com
Ms. Dorothy V. Stanley ()	voter	100	+1 630 979 1572	Agere Systems	dstanley@agere.com
Dr. Adrian Stephens ()	voter	100	+44 771 276 3448	Mobilian Corporation	adrian.stephens@mobilian. com
Mr. Spencer Stephens	aspirant	100	805.777.7911 x124	Strix Systems	cto@strixsystems.com
Mr. Bill Stevens ()	aspirant	100	(425) 883-2088 x145	Radioframetm Etworks n	bill@radioframenetworks.com
Mr. Carl R. Stevenson	voter	100	(610) 712-3271	Agere Systems	carlstevenson@agere.com
Ms. Susan Storma ()	voter	100	+1 407 659 5365	Mesh Networks	sstorma@meshnetworks.com
Mr. Michael Su ()	aspirant	100	510-687-3474	Via Technologies	MichaelSu@viatech.com
Mr. Masahiro Takagi ()	aspirant	100		Toshiba Corporation	takagi@csl.rdc.toshiba.co.j
Mr. Minoru Takemoto ()	voter	100	81-743-65-4529	Sharp Corporation	takemoto@slab.tnr.sharp.c o.jp
Mr. Jasper Tan ()	aspirant	100	(408) 894-0295	Realtek Semiconductor Corp.	jaspert@realtek.com.tw
Mr. Teik-Kheong Tan (TK)	voter	100	+1 408 326 6524	3Com Corporation	tantk@pacific.net.sg
Dr. John Terry (John)	voter	100	+1 972 894 5742	Nokia Research Center	john.terry@nokia.com
Mr. Yossi Texerman ()	voter	100	+972 9 743 0161 ext 309	Envara	yossit@hlan.com
Mr. Peter Thornycroft ()	aspirant	100	(408) 527-7361	Cisco Systems Inc.	pthornyc@cisco.com
Mr. Jerry A. Thrasher (Jerry)	voter	100	+1 859 825 4056	Lexmark International, Inc	thrasher@lexmark.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. James D. Tomcik ()	voter	100	858 658 3231	QualComm	jtomcik@qualcomm.com
Mr. Walt Trzaskus ()	voter	100	407 829 4440	Direct2Data Technologies	trzaskus@d2d.com
Mr. Allen Tsai ()	voter	100	+886-3-516-5106	InProComm, Inc.	Allen Tsai allen@inprocomm.com
Dr. Chih C. Tsien	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
Mr. Khaled Turki ()	voter	100	+1 214 480 6908	Texas Instruments	khaled@ti.com
Mr. Toru Ueda ()	voter	100	+81 743 65 4529	Sharp Corporation	ueda@slab.tenri.sharp.co.jp
Mr. Wim J. van Houtum ()	voter	100	+31 40 27 44619	Philips Research	Wim.van.Houtum@philips.com
Dr. Richard van Nee ()	voter	100	+31 30 276 3575	Woodside Networks	vannee@woodsidenet.com
Mr. Patrick Vandenameele ()	aspirant	100	+32 16 38 72 72	Resonext	patrick.vandenameele@resonext.com
Dr. Dmitri Varsanofiev	voter	100	+1 617 812 0542	Resonext	dmitri@varsanofiev.com
Dr. Madan Venugopal ()	voter	100	+1 510 249 0940	ComSilica Inc.	madan@comsilica.com
Mr. Ingrid Verbauwhede ()	aspirant	100	(310) 794-5209	UCLA	ingrid@ee.ucla.edu
Mr. Ritesh Vishwakarma ()	voter	100	+1 408 327 9990	Zeevo	ritesh.vishwakarma@zeevo.com
Mr. Aleksey Voitovich	aspirant	100	+7 (095) 424-7985	Cybiko, Inc.	aleksey_v@cybiko.com
Mr. John Vollbrecht ()	aspirant	75	(734) 821-1205	Interlink Networks	jrv@interlinknetworks.com
Dr. Toan X. Vu ()	aspirant	100	(714) 549-6268	Symbol Technologies Inc	toanv@symbol.com
Mr. Tim Wakeley (Tim)	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. Thierry Walrant ()	voter	100	+1 408 617 4676	Philips Consumer Electronics	thierry.walrant@philips.com
Dr. Chao-Chun Wang ()	aspirant	100		TVIA	
Dr. Joe Wang ()	aspirant	100	(408) 988-5988	SVS Corporation	wang.joe@inventec.com
Mr. Christopher Ware ()	voter	100	+ 61 2 9666 0632	Motorola Labs	chrisw@arc.corp.mot.com
Mr. Mark Webster (Mark)	voter	100	+1 321 724 7537	Intersil Corporation	mark.webster@intersil.com
Mr. Lim Wei Lih ()	voter	100	3815493	Panasonic Singapore Laboratories	wlim@psl.com.sg
Dr. Mathew Welborn ()	voter	100	+1 703 269 3052	XtremeSpectrum	mwelborn@xtremespectrum.com
Mr. Menzo Wentink (Menzo)	voter	100	+31 30 225 97 52	Intersil B.V.	mwentink@intersil.com
Dr. Richard G.C. Williams ()	aspirant	100	(858) 530-3760	Texas Instruments Incorporated	richard@ti.com
Dr. Richard G.C. Williams ()	aspirant	100	(858) 530-3760	Texas Instruments Incorporated	richard@ti.com
Mr. Steven D. Williams (Steven)	voter	100	+1 503 264 2043	Intel Corporation	steven.d.williams@intel.co
Mr. Harry Worstell (Harry)	voter	100	+1 973 236 6915	AT&T Labs	hworstell@att.com
Dr. Charles R. Wright	aspirant	100	(978) 684-1361	Enterasys Networks, Inc	cwright@enterasys.com
Ms. Liwen Wu ()	voter	100	+1 408 853 4065	Cisco Systems, Inc.	liwwu@cisco.com
Mr. Shyhtsun WU (Felix)	aspirant	100	(530) 754-7070	University of California	wu@cs.ucdavis.edu
Dr. Yang Xiao ()	aspirant	100	(801) 617-2518	MicroLinear	yangxiao@ieee.org
Dr. Shugong Xu ()	aspirant	100	(360) 834-8672	Sharp Laboratories of America	sxu@sharplabs.com
Mr. Jung Yee ()	voter	100	+1 613 234 2046	IceFyre Semiconductor Inc.	jyee@icefyre.com

<i>Full name</i>	<i>status</i>	<i>att. %</i>	<i>phone</i>	<i>company</i>	<i>e_mail</i>
Dr. Wen-Ping Ying (Wen-Ping)	voter	100	+1 425 825 1770 x 109	NextComm, Inc.	wying@nextcomminc.com
Mr. Kit Yong ()	aspirant	100	+1 281-290-9922 x202	Lincom	kity@lincom.com
Mr. Albert Young (Albert)	voter	100	+1 408-253-0491	3Com Corporation	ayoung212@attbi.com
Mr. Patrick Yu ()	aspirant	100	(408) 452-4905	Acer Laboratories Inc., USA	patrick_yu@ieee.org
Mr. Jin Zhang ()	aspirant	100		Mitsubishi	jzhang@merl.com
Mr. Arnoud Zwemmer ()	voter	100	+31 30 229 60 84	Intersil Corporation	arnoud.zwemmer@intersil.c om
Mr. Jim Zyren (Jim)	voter	100	+1 321 729 4177	Intersil Corporation	jzyren@intersil.com

**IEEE P802.11
Wireless LANs**

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

Wyndham Anatole, Dallas, Texas

Date: January 21 - 25, 2002

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

1. Monday Morning

1.1. Call to order

1.1.1. Meeting called to order at 10:45AM by John Fakatselis

1.1.2. Secretary Tim Godfrey

1.2. Review of proposed agenda

1.2.1.1. Opening

1.2.1.2. Call for Papers

1.2.1.3. Comment Resolution

1.2.1.4. Presentation of Papers

1.2.1.5. Thursday – AV Study Group

1.2.1.6. Thursday evening – go over new draft, decide if we have another letter ballot (or recirculation).

1.2.1.7. Fixed Agenda Items:

1.2.1.7.1. Vote on New Draft, Thursday 7:30PM.

1.2.1.8. Discussion on Agenda

1.2.1.8.1. Harry said that drafts must be on the server by 4:30.

1.2.1.8.2. Drafts need one hour before vote. But there is a 4 hour rule for new normative text to be added to the Draft.

1.2.1.8.3. The modified draft must be available by 6:30PM to vote on it at 7:30PM.

1.2.1.8.4. There is a specific TGe rule saying that motions with Normative Text, that text must be available 4 hours in advance.

1.2.1.8.5.

1.2.2. Approval of Agenda

1.2.2.1. *The agenda is approved without objection*

1.3. LB30**1.3.1. LB30 results**

1.3.1.1. *266 voters on record, received 221 votes, 218 valid votes.*

1.3.1.2. *Abstain 33 – 15.1%*

1.3.1.3. *No 84 – 45.4%*

1.3.1.4. *Yes 101 - 54.6%*

1.3.2. Discussion

1.3.2.1. *There is only one valid abstained – lack of expertise.*

1.3.2.2. *Several No votes were received without comments, but were re-submitted without comments.*

1.3.3. Outcomes

1.3.3.1. *The group needs to issue a new Letter Ballot.*

1.3.3.2. *If we were to gain 75% approval, we can move to recirculation. The advantage of recirculation is that voters cannot reopen areas that have not had comments before.*

1.3.3.3. *We will ask for No voters to reverse their votes to Yes once we have addressed their comments.*

1.3.3.4. *We need 35 No Votes to change to Yes. Otherwise we have to have a new Letter Ballot.*

1.3.4. Process

1.3.4.1. *We will address as many comments as possible through papers. Prioritize if the paper addresses multiple No Vote issues.*

1.3.4.2. *Continue by addressing groups of same subject concerns.*

1.3.5. Comment Resolution

1.3.5.1. *All merged Comments are on Pluto server. Many comments are described technical, but are really editorial.*

1.3.5.2. *There are many duplicate comments.*

1.3.5.3. *Many No votes were based on a small number of comments.*

1.3.5.4. *Discussion*

1.3.5.4.1. *Relative to the first letter ballot, what were the number of comments and approval rating?*

1.3.6. Editorial Team

1.3.6.1. *Volunteers*

1.3.6.1.1. *Srini*

1.3.6.1.2. *John K*

1.3.6.1.3. *Matthew*

1.3.6.1.4. *Atul Garg*

- 1.3.6.1.5. *Sunghyun*
- 1.3.6.1.6. *Jin Meng*
- 1.3.6.1.7. *Greg Chesson*
- 1.3.6.2. *Lead Editor – Matthew*
- 1.3.6.2.1. *Appointed with No Objection*
- 1.3.6.2.2. *Acting in the absence of the 802.11e Editor.*

1.3.7. Draft Status

- 1.3.7.1. *The intent is to start with Draft 2.0a as our baseline. It incorporates all editorial changes known to be*
- 1.3.7.2. *Motion to adopt 2.0a will be made at 2:00PM*
- 1.3.7.2.1. *Will not cause an issue with recirculation. We will have a new draft at the end of the week, the question is whether it is a recirculation or a letter ballot.*

1.4. General

1.4.1. Chair's comments on procedure

- 1.4.1.1. *There has been some abuse of privileged motions to stall process. Please refrain from frivolous use of Point of Order or Point of Information.*

1.4.2. Approval of Minutes

- 1.4.2.1. *Minutes of November 2001. Approved without objection.*

1.5. Call for Papers

1.5.1. HCF IBSS

- 1.5.1.1. *Paper 009– Bob Huang*
- 1.5.1.2. *Paper 010– Bob Huang*

1.5.2. Addressing Comment

- 1.5.2.1. *014 – modifications to Burst Ack – Duncan Kitchin*
- 1.5.2.2. *015r1 – HCF channel access rules – Duncan Kitchin*
- 1.5.2.3. *016 – Side Traffic – Duncan Kitchin*
- 1.5.2.4. *018 – Side Traffic – Srin*
- 1.5.2.5. *??? – Bitmap Length for Burst Ack – Isaac*
- 1.5.2.6. *048 – 01/566r3 – Sunghun, normative text for TXOP bursting.*
- 1.5.2.7. *01/630r2 – Sunghun- HC recovery and backoff*
- 1.5.2.8. *022 – Khaled – TID field Usage.*
- 1.5.2.9. *01/128r5 – Jin Meng/ Michael Fischer – HCF access rules and inter-bss channel sharing.*
- 1.5.2.10. *004 – Jin Meng – burst ack modification.*
- 1.5.2.11. *005 – Jin Meng – ack and FEC policy.*
- 1.5.2.12. *050 – Sunghyun – tspec for sidestream*
- 1.5.2.13. *019 – Matt S – reporting erroneous packets*

- 1.5.2.14. 01/408r3 – Matt S – use of AIFS
- 1.5.2.15. 01/599r2 – Matt S – CPMA , HCF access and OBSS.

1.5.3. Discussion

- 1.5.3.1. *The chair request that paper presentations should be limited to 15 minutes, with 15 minutes for discussion.*
- 1.5.3.2. *Time limit is adopted without objection.*
- 1.5.3.3. *How many papers have motions and normative text?
Almost all.*
- 1.5.3.4. *We have about 15 No voters in the room currently.*
- 1.5.3.5. *Suggestion – to start out with general issues papers?*

1.6. Major Issues List

- 1.6.1.1. *Bridge Portals*
- 1.6.1.2. *Controlled Contention*
- 1.6.1.3. *Signaling for Side Traffic*
- 1.6.1.4. *EDCF protocol*
- 1.6.1.5. *HCF Polling*
- 1.6.1.6. *Burst ACKs and FEC policy*
- 1.6.1.7. *QoS in IBSS*
- 1.6.1.8. *Overlapping BSS mitigation*

1.6.2. Discussion

- 1.6.2.1. *The chair asks for the group to be reasonable and open to compromise so we can move toward closure.*
- 1.6.2.2. *Editorial team to meet after this session.*

1.7. Recess

2. Monday Afternoon

2.1. Opening

2.1.1. Call to order at 1:00PM

2.1.2. Discussion

- 2.1.2.1. *We don't know how to pre-announce votes to other groups since we don't have any motions.*
- 2.1.2.2. *The chair moves to Duncan Kitchin*

2.2. Comment Resolution

2.2.1. Topics for Discussion

- 2.2.1.1. *Bridge Portals*
- 2.2.1.2. *Controlled Contention*
- 2.2.1.3. *QoS Control field*
- 2.2.1.4. *Signaling for Side Traffic*

- 2.2.1.5. *EDCF protocol*
- 2.2.1.6. *HCF Polling*
- 2.2.1.7. *Burst ACKs and FEC policy*
- 2.2.1.8. *QoS in IBSS*
- 2.2.1.9. *Overlapping BSS mitigation*

2.2.2. Adjustment of order

- 2.2.2.1. *We want to move bridge portals and controlled contention to Wednesday when Michael is here.*
 - 2.2.2.1.1. *Straw Poll of voting members – do we move Bridge Portals down the list.*
 - 2.2.2.1.2. *Those who think the order is OK as is: 16:3:7. We leave the list as is.*
- 2.2.2.2. *We will develop a list of expected times for these topics.*

2.2.3. Bridge Portals

- 2.2.3.1. *Are there any submissions? None*
- 2.2.3.2. *Are there any No voters that wish to comment on the subject?*
- 2.2.3.3. *The concern is that there is lack of supporting text. Suggests removing it entirely.*
- 2.2.3.4. *The draft doesn't have a mechanism for discovering a bridge portal. The AP knows the Bridge Portal, but an information frame is needed.*

2.2.3.5. *Motion – Instruct the editor to remove bridge portals and all references to bridge portals from the draft.*

- 2.2.3.5.1. *Moved John K*
- 2.2.3.5.2. *Second Srini*
- 2.2.3.5.3. *Discussion –*

- 2.2.3.5.3.1. *Concerns about discovering will be addressed in other presentations. A multicast address could be assigned. Will prepare a document. Against the motion.*
- 2.2.3.5.3.2. *There is not much there now. Taking it out doesn't have much of an effect. We have a general discovery problem. Also what do you do once you find it.*
- 2.2.3.5.3.3. *Request a straw poll – do they want to remove bridge portal because the don't like it at all, or because there isn't a good mechanism.*

- 2.2.3.5.3.3.1. *Not interested in BP at all: 10*
- 2.2.3.5.3.3.2. *Interested in BP, but not as specified: 15*
- 2.2.3.5.3.3.3. *Against the motion to remove: 5*

- 2.2.3.5.3.4. *So, 2/3 like bridge portals.*
- 2.2.3.5.3.5. *The question is called without objection*

- 2.2.3.5.4. *Vote on the motion: fails 18:11:6*
- 2.2.3.5.5. *Discussion*

2.2.3.5.5.1. What is needed to reconsider? Simple majority, but must be proposed by someone on the winning side. Must be made today or tomorrow.

2.2.4. Controlled Contention

2.2.4.1. *Are there any submissions? No*

2.2.4.2. *Any discussion on the topic?*

2.2.4.2.1. *The issue with CCI is that it introduces a new and different contention mechanism. Why is it needed? The "normal" contention mechanism could be used in the CCI interval. There are other ways to set aside un-contended time for stations to get access. It should either be taken out or repaired, or made optional.*

2.2.4.2.2. *It is not the case that there has been no simulations given on CC/RR. Document 01/571 has been presented. It has been shown to be functional and advantageous. In the case of high occupancy network, this separate period of time provides a lower overhead.*

2.2.4.2.3. *Contention is bad if not managed. Just adding another contention period of a different type is not the solution. DCF and EDCF are able to adapt to heavy load. CC RR perverts the properties of HCF.*

2.2.4.2.4. *Notes that CC RR is mandatory. In favor of removing it.*

2.2.4.2.5. *Why fix contention with contention? Because the existing contention only offers one priority above legacy. The reservation request is the only thing that can be used for reservation request. Normal contention is open to anything – uncontrolled and unlimited. CCI size is not fixed.*

2.2.4.3. *Motion – instruct the editor to remove the CCI mechanism from the draft and permit RR frames during any TXOP.*

2.2.4.3.1. *Moved Wim*
 2.2.4.3.2. *Discussion*

2.2.4.3.2.1. *Would like to keep RR. Objects to CCI. Allow the RR message to be sent during any TXOP.*
 2.2.4.3.2.2. *RR frames are the same as QoS Null. Yes, but it is preferable to have specific control bits and opcode rather than overloading QoS Null*

2.2.4.3.3. *Second Williams*
 2.2.4.3.4. *Discussion*

2.2.4.3.4.1. *The CCI is needed to give RR priority above DCF.*
 2.2.4.3.4.2. *RR Frames are also permitted under polled TXOPs so that's not an issue.*
 2.2.4.3.4.3. *Polling is not a solution – the station would not be polled because the AP wouldn't know the station needed to be polled.*

- 2.2.4.3.4.4. We have not seen any simulations on the behavior of RR under EDCF.
- 2.2.4.3.4.5. For the motion – 5% channel capacity has to be reserved for CCI. EDCF would be better.
- 2.2.4.3.4.6. The issue is getting put on the polling list. It is not compelling that CCI is better than just using EDCF high priority.

- 2.2.4.3.5. *The question is called without objection*
- 2.2.4.3.6. *Vote on the motion: Fails 20:14:7*

2.2.4.4. *Motion – instruct the editor to make the CCI mechanism in the draft optional.*

- 2.2.4.4.1. *Moved Kowalski*
- 2.2.4.4.2. *Second Chesson*
- 2.2.4.4.3. *Discussion*

- 2.2.4.4.3.1. Discourages the indiscriminate use of options. We need to decide. Excess options make a bad standard.
- 2.2.4.4.3.2. It is almost optional now. Periodic streams don't send RR. Use of CC RR is optional at a station, but not at an AP.
- 2.2.4.4.3.3. There is always a motion to eliminate this mechanism. We had a compromise a year ago. This was the main part of that. This motion continues to go against this compromise agreement. We have to have mechanisms both in order to get this through.
- 2.2.4.4.3.4. Would like to be able to make an AP that is only prioritized. It is possible to make an AP that would use HCF to give EDCF stations no time. For the motion.
- 2.2.4.4.3.5. If EDCF isn't good enough to do CC, then we need to fix EDCF and not add another mechanism.

- 2.2.4.4.4. *Question called without objection*
- 2.2.4.4.5. *Vote on the motion: fails 19:15:4*

2.2.4.5. *Move to reconsider the motion “instruct the editor to remove the CCI mechanism from the draft and permit RR frames during any TXOP.” And to set the time to vote on the motion to reconsider at 2PM on Wednesday, 23 January.*

- 2.2.4.5.1. *Moved John K*
- 2.2.4.5.2. *Second Williams*
- 2.2.4.5.3. *Motion to table the motion to reconsider.*
- 2.2.4.5.3.1. Jin Meng
- 2.2.4.5.3.2. The chair moves to John Fakatselis.
- 2.2.4.5.3.3. The chair rules that this motion goes against the motion on the floor's intent, and the same objective can be achieved by voting down the main motion.

- 2.2.4.5.4. *Motion to divide*
 - 2.2.4.5.4.1. Moved Duncan
 - 2.2.4.5.4.2. Passes Without objection
- 2.2.4.6. *Motion on the floor: to postpone the time on the motion to reconsider until 2pm on Wednesday*
 - 2.2.4.6.1. *Moved John K.*
 - 2.2.4.6.2. *Discussion.*
 - 2.2.4.6.2.1. We have other things to do here would not want to spend more time on it. Against the motion.
 - 2.2.4.6.2.2. It is worthwhile to solve this now. We have failed to make any decisions to change the draft. Postponing this gives the group time to work out a solution that is acceptable to all. In favor.
 - 2.2.4.6.2.3. Call the question Duncan/Greg
 - 2.2.4.6.2.3.1. Vote on calling the question: Question called 28:0:5
 - 2.2.4.6.3. *Vote: Passes 22:4:6*
- 2.2.4.7. *The chair moves to Duncan Kitchen.*
- 2.2.4.8. *Discussion*
 - 2.2.4.8.1. *There are a lot of votes against CC/RR. How many? Don't know, but the results are on the server.*

2.2.5. QoS Control Field

- 2.2.5.1. *Delay until 4:00. Text is on the server 02/005 has been on the server since 12:00. We defer because of the 4 hour rule.*

2.2.6. Side Traffic Setup and Signaling

- 2.2.6.1. *The chair moves to John Fakatselis*
- 2.2.6.2. *Presentation of document 02/016r0 "Wireless Address Resolution Protocol".*
 - 2.2.6.2.1. *Need to determine which stations are best reached directly or best reached through the AP. Need to identify legacy stations (since it might not work right). Need to deal with power save modes, roaming, and security*
 - 2.2.6.2.2. *Stations would register as being able to receive direct traffic. It is not a capability bit – it is dynamic, and can change over time.*
 - 2.2.6.2.3. *AP controls whether direct is allowable for security policy.*
 - 2.2.6.2.4. *AP provides Wake Notify service, and sets TIM bit for second station.*
 - 2.2.6.2.5.

Recess for afternoon break at 3:00PM

Call to order at 3:30PM

- 2.2.6.3. *Discussion on Wireless Address Resolution Protocol Document*

2.2.6.3.1. *Would like to make motion to adopt this as a baseline, without limiting future enhancements from subsequent motions.*

2.2.6.4. *Motion Instruct the editor to incorporate the normative and informative text contained in submission 02/016r0 into the draft.*

2.2.6.4.1. *Moved Duncan Kitchin*

2.2.6.4.2. *Second Srimi Kandala*

2.2.6.5. *Discussion*

2.2.6.5.1. *Would like to add a capability field to the station's cache.*

2.2.6.5.2. *Motion to amend: "... with the addition of support for capability information in the cache."*

2.2.6.5.2.1. *Moved Khaled Turki*

2.2.6.5.2.2. *Second Kandala*

2.2.6.5.2.3. *Vote on motion to amend: Passes 22:0:6*

2.2.6.6. *Motion on the floor: Instruct the editor to incorporate the normative and informative text contained in submission 02/016r0 into the draft, with the addition of support for capability information in the cache.*

2.2.6.6.1. *Discussion*

2.2.6.6.1.1. *This should be merged with the Bridge Portal. While it does address the mechanism, but it should be a separate motion.*

2.2.6.6.1.2. *This needs more work to make this solve the bridge portal problem.*

2.2.6.6.1.3. *Is there sufficient information defined to support the additional caching as amended? Yes, it is in an informative section.*

2.2.6.6.1.4. *Does the paper handle the case of inability to send frames directly? What happens in that case?*

2.2.6.6.2. *Vote: Motion passes 27:0:8*

2.2.6.7. *The chair moves to Duncan Kitchin*

2.2.6.8. *Presentation of Document 02/18r0 "Enabling direct WSTA to WSTA transmissions in a QBSS".*

2.2.6.9. *The chair moves to John Fakatselis*

2.2.6.10. *Motion: Instruct the editor to incorporate the normative text for clause 10 as contained in submission 02/018r0.*

2.2.6.10.1. *Moved Srimi Kandala*

2.2.6.10.2. *Second John Kowalski*

2.2.6.10.3. *Discussion*

2.2.6.10.3.1. *None*

2.2.6.10.4. *The motion is accepted with unanimous consent.*

2.2.7. QoS Control Field

2.2.7.1. *Deferred until 4PM, moved to section on Burst ACK.*

2.2.8. Bridge Portals

2.2.8.1. *The work on "WARP" (STA-STA) could be applicable to bridge portals. We will be returning to the subject up later this week.*

2.2.9. EDCF

2.2.9.1. *Motion: Instruct the editor to add the following sentence to the end of clause 6.1.1.1: "Management frames shall always be sent at the highest delivery priority."*

2.2.9.1.1. *Moved John Kowalski*

2.2.9.1.2. *Second Srimi Kandala*

2.2.9.2. *Discussion*

2.2.9.2.1. *This is not testable.*

2.2.9.2.2. *Priority mapping is according to 802.11d-1998, which already says that management frames are already prioritized above best effort data.*

2.2.9.2.3. *There is an issue with sequence numbers.*

2.2.9.3. *Motion to amend to "Management frames shall be treated as the highest priority frame with respect to channel access at the transmitting QSTA"*

2.2.9.3.1. *Moved Raju Gubbi*

2.2.9.3.2. *Second John Kowalski*

2.2.9.3.3. *Discussion*

2.2.9.3.3.1. *This makes it clear that it is dealing with channel access, and not sequence numbers.*

2.2.9.3.4. *The motion to amend passes with unanimous consent.*

2.2.9.4. *Main Motion: : Instruct the editor to add the following sentence to the end of clause 6.1.1.1: "Management frames shall be treated as the highest priority frame with respect to channel access at the transmitting QSTA"*

2.2.9.4.1. *Discussion*

2.2.9.4.1.1. *This only applies to management frames generated in the MAC.*

2.2.9.4.1.2. *Then what about this 802.1d comment? Those management frames are not the same? This motion only refers to 802.11 management frames.*

2.2.9.5. *Motion to amend: Change "Management Frames" to "MMPDUs"*

2.2.9.5.1. *Moved Srimi Kandala*

2.2.9.5.2. *Second John Kowaski*

2.2.9.5.3. *Motion passes with unanimous consent*

2.2.9.6. *Main Motion: : Instruct the editor to add the following sentence to the end of clause 6.1.1.1: "MMPDUs shall be treated as the highest priority frame with respect to channel access at the transmitting QSTA"*

2.2.9.6.1. *Discussion*

2.2.9.6.1.1. *Call the question without objection.*

2.2.9.6.2. *Vote: Fails 17:19:4*

2.2.10. **EDCF**

2.2.10.1. *Presentation of Document 01/408r3 "Use of AIFS"
Matt Sherman*

2.2.10.1.1. *Two forms of AIFS, the original TCMA proposal, and what is in the draft.*

2.2.10.1.2. *Recommends to unify DCF and EDCF timing relationship.*

2.2.10.2. *Requests agenda time tomorrow for making motions on this. Motions have not been on server for 4 hours.*

2.2.10.3. *Discussion*

2.2.10.3.1. *What is D-AIFS? It is what is in the draft, which is different that what was intended.*

2.2.10.3.2. *Discussion will continue tomorrow with motions.*

2.2.11. **EDCF**

2.2.11.1. *Presentation of document 02/048r0 (presentation) and 01/566r3 (with normative text) "EDCF and TXOP Bursting Simulation results" Sunghyun Choi.*

2.2.11.1.1. *An EDCF TXOP can transmit only a single MSDU, but a polled TXOP can allow multiple MSDUs.*

2.2.11.1.2. *EDCF bursting should be allowed.*

2.2.11.1.3. *Simulation results show improved throughput and reduced dropped packets when using EDCF Bursting.*

2.2.11.2. *Discussion*

2.2.11.2.1. *Does the traffic stay within acceptable jitter bounds? It wasn't simulated, but it shouldn't be a problem.*

2.2.11.2.2. *Would this bursting affect good HC scheduling? How to keep from blocking the HC? No, the HC still controls the CP TXOP-limit.*

2.2.11.3. *Motion: To instruct the editor to incorporate the normative text contained in submission 01/566r3 slide 6 into the draft*

2.2.11.3.1. *Moved Sunghyun Choi*

2.2.11.3.2. *Second Anil Sanwalka*

2.2.11.3.3. *Discussion*

2.2.11.3.3.1. *EDCF was designed to provide a minimal level of QoS, and HCF is designed for robust QoS. We keep trying to grow EDCF into something it wasn't intended for. We should encourage the use of HCF when it is appropriate. Against the motion.*

- 2.2.11.3.3.2. Is there a requirement that stations implement EDCF bursting?
- 2.2.11.3.3.3. Was this simulation being done with HCF? No.
- 2.2.11.3.3.4. It would have been better performance and less complexity.
- 2.2.11.3.3.5. The HC has to schedule around this behavior of stations. What is the impact on the HC and scheduler? What is the increase in complexity there? The HC should work even with the worst case, and the TXOP limit provides a bound.
- 2.2.11.3.3.6. Call the question (Stephens / Sanwalka)

2.2.11.3.3.6.1. Vote on calling the question: Passes
14:4:18

2.2.11.3.4. *Vote: Motion fails 9:24:8*

2.2.11.4. *Any No-Voter comments related to EDCF that wish to make a statement?*

2.2.11.4.1. *We don't enough time for that.*

2.2.12. Motion to Recess – without objection

3. Monday Evening Session

3.1. Opening

3.1.1. **Called to order at 18:53**

3.1.2. **In the chair: Duncan Kitchin**

3.1.3. **Author of this session: Adrian Stephens**

3.2. Comment Resolution

3.2.1. **Chair invites those with EDCF comments, but no presentations to bring them and make a motion.**

3.2.2. **EDCF**

3.2.2.1. *Motion: to instruct the editor to add comments and clarify that EDCF is an option and make only the controlled access component of HCF required implementation.*

3.2.2.1.1. *Moved: Peter Loc*

3.2.2.1.2. *Second: Khaled Turki*

3.2.2.1.3. *Against: Maarten Hoeben. It goes against what we've been doing for a long time. It doesn't solve anything.*

3.2.2.1.4. *?: Mat Sherman. Removing something reduces complexity. If it's OK for HCF to be an option, so should EDCF.*

3.2.2.1.5. *John Kowalski. Need to be decisive*

3.2.2.1.5.1. *Kowalski: Move to postpone a vote until 4:00pm Wednesday.*

- 3.2.2.1.5.2. Second: Steve Williams
 3.2.2.1.5.3. Against: Mat Sherman
 3.2.2.1.5.4. Against: Adrian Stephens. Why wait for other TGe to be present?
 3.2.2.1.5.5. Against: Mat Sherman. It's not a good idea to put stuff off. This is a full meeting of TGe, so why put stuff off?

3.2.2.1.5.5.1. Call the questions: Anil Sanwalka / Mat Sherman.

3.2.2.1.5.5.2. Passed by acclaim.

3.2.2.1.5.6. Fails: 21/22/5 (procedural)

- 3.2.2.1.6. *Against: Steve Williams. Many applications are served by EDCF. Requiring HCF adds cost.*
- 3.2.2.1.7. *For: Sid Schaum. Feels in dilemma. Recognize work in EDCF in the standard and that passing motion may be disruptive. In favor technically because people need to be pointed to one access method that provides robust QoS. Letter ballot comments show confusion as to EDCF/HCF roles and redundant mechanisms. If made it optional, most would implement it anyway. One needs to take a dominant role.*
- 3.2.2.1.8. *Against: Adrian Stephens. 1. Reliable lowest-common denominator is EDCF. 2. Reducing optionality is a good thing for manufacturers and WECA.*
- 3.2.2.1.9. *For: Sid Schaum. Don't thinks making EDCF optional is in the same class as making HCF optional re: interoperability.*
- 3.2.2.1.10. *Against: Maarten Hoeben. Thinks we have a nice balance between capabilities of EDCF/HCF. Thinks both are necessary and removing EDCF will be disruptive*
- 3.2.2.1.11. *?: John Kowalski. Is not EDCF already optional?. AIFS are not required to be different numbers. Am I wrong?*
- 3.2.2.1.12. *For: Peter Loc. Their simulations show EDCF works poorly with legacy stations.*
- 3.2.2.1.13. *Chair passes to John Fakatselis*
- 3.2.2.1.14. *Against: Duncan Kitchin. EDCF should take bandwidth away from legacy stations, so does HCF. This is a design goal of TGe. Optionality is bad.*
- 3.2.2.1.15. *For: Jin-Meng Ho. Technically EDCF is not normative. The number of queues is currently not defined. The mapping of TCID to TC to Queue is not defined. There is no mechanism for using it. Stations may use only the highest-priority queue, achieving no separation of traffic classes.*
- 3.2.2.1.16. *For: Mat Sherman. Mat sees EDCF as mandatory in the AP – at least transmitting EDCF parameters. There is no consensus*
- 3.2.2.1.17. *Against: Menzo. Happy with combination we've got now. Don't agree with intent to weaken what we've got.*

Simulations by Greg Chesson support EDCF in a range of situations, and have also seen poor HCF simulations.

3.2.2.1.18. Sean Coffey: Call the Question

3.2.2.1.18.1. Second: Zyren

3.2.2.1.18.2. Passes: 48/10/2 (procedural)

3.2.2.1.19. Fails: 28/28/4 (technical)

3.2.2.2. Notice that 01/403r4 (updated since presentation today) will be voted on tomorrow.

3.2.3. (Chair passes to Duncan Kitchin)

3.2.4. HCF Polling

3.2.4.1. 02/22r0 – postponed until Burst Ack and QoS discussion.

3.2.4.2. Chair Passes to Jon Rosendahl

3.2.4.3. Presentation: Duncan Kitchin, 02/15r1. “HCF Channel Access Rules”. Proposed normative text (no presentation).

3.2.4.3.1. (Chair Passes back to John Fakatselis)

3.2.4.3.2. An attempt to describe frame-exchange rules using a methodology closer to a state machine behaviour. Includes a few pages of informative text to give an easy background/intro.

3.2.4.3.3. The only intentional technical changes are: 1. to limit the amount of time the HC uses for polled channel access. This is based on MIB parameters defining the proportion of time that it can use for its polling. This could be set to 100% to achieve total control. 2. There is also a limit on CAP burst length based on a CAP timer.

3.2.4.3.4. Expects QoS CF-polls to be used only to deliver a TXOP (not data). Data can be sent from the HC as part of a CAP, but these are not CF-polls. This generates some nasty corner-cases, but there has been a lot of push-back from people who want to do this.

3.2.4.3.5. HC reclaims control of the medium after a PIFS. Two ways of doing this: either the HC or the STA detect failure. Believes HC detection is more robust in the presence of errors. On failure of an ACK, the transmitting station does a new channel access and the HC regains control of the medium.

3.2.4.3.6. New text in section 9 to describe what happens when TSpecs are created and destroyed.

3.2.4.3.7. Says HCF polling is distinct from PCF polling – it is delegation of time.

3.2.4.3.8. Keith. Cannot find r1. Duncan: its in [\plutol\venus\submissions\TGe](#).

3.2.4.3.9. Keith: Does the doc include frame exchange sequences. A: no – frame exchange rules?

3.2.4.3.10. Sri: Error recovery is currently role of TXOP holder currently. A: yes. Sri: when is CAP timer incremented?

3.2.4.3.11. John Kowalski: Does this require that after every CAP is enough time for one MPDU? A: depends on

parameters (CAP timer and limit). JK: It prevents the HC polling multiple stations. A: no – it is based on a CAP – may be different destinations.

3.2.4.3.12. Adrian Stephens: Loss of TXOP by station supporting 802.15.2 coexistence mechanism that defers to SCO traffic.

3.2.4.3.13. Duncan requests straw poll on: “whether return of control to the medium should be the responsibility of the HC or TXOP holder.”

3.2.4.3.13.1. 5 for HC, 12 for TXOP holder, 18 did not participate.

3.2.4.3.14. Based on above, Duncan proposes to come back tomorrow with an r2 incorporating the above change.

3.2.4.3.15. Matthew Sherman: Michael Fisher will 02/12 that will describe frame exchange sequences. In the overlap BSS case, how does what he has cope? A: has proposed a mechanism, but doesn't expect the BSS overlap mechanism based on contention to work very well.

3.2.4.3.16. Jin-Meng: could we address “no” votes to HCF polling, and what specific comments does this address. Concerned that adoption of this document would generate more no votes if HCF is required to operate in the contention period.

3.2.4.3.17. Sri: is the medium occupancy timer valid given the decision this afternoon to only send a single MSDU in an EDCF TXOP? A: it's the same mechanism, the same timer. Q: What values for the parameters? A: CAP rate of about 70-80%.

3.2.4.3.18. Bob: HC cannot send a Poll to anything that hasn't sent a queue-state or TPEC. Is TSPEC response necessary? A: there is none at the moment – it's what's there at the moment. Someone else could add one. Q: everybody here should read this very carefully.

3.2.4.3.19. Sid Shaum. Applaud what's here. Wants to consider after ample time for consideration given scope of material and given there are presentations in conflict.

3.2.4.3.20. Sunghyn: Seems like there are lots of minor points that are inconsistent. A: yes, he had to make lots of assumptions in going through and being unambiguous.

3.2.4.3.21. Revised version to be presented tomorrow.

<p>3.2.4.4. Motion: Instruct the editor to delete the words: “and/or increase CCI length to reduce contention” from subclause 9.10.4.4 of the draft.</p>
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<p>3.2.4.4.1. Moved: John Kowalski</p>
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<p>3.2.4.4.2. Seconded: Srin</p>

<p>3.2.4.4.3. ??: Mat. Doesn't see it causes any problem.</p>

<p>3.2.4.4.4. Adrian: any reduction in CC/RR is a good thing.</p>

<p>3.2.4.4.5. Passes: 15/1/12 (technical)</p>

3.2.5. Duncan: suggest we consider breaking into Ad-hoc groups tomorrow morning to handle some specific issues.

3.2.5.1. *John F: rules this in order and in the spirit of the group.*

3.2.5.2. *Possible groups: AP mobility, changes to Duncan's document.*

3.2.6. John F: Chair's comments.

3.2.6.1. *Annex 2 to the operating rules. Presentation of guidance on how we should get to re-circulation.*

3.2.6.2. *No new "no" votes to unchanged clauses.*

3.2.6.3. *Eliminate "no" votes if all proposed changes from that ballot are accepted.*

3.2.6.4. *If the TG does not accept the objection, or has an alternative, the TG must contact the voter to explain the position.*

3.2.6.5. *Negative votes with non-specific comments can be re-classified as non-response if the comment isn't specific enough to allow a resolution to be identified.*

3.2.7. AOB

3.2.7.1. *Keith: how many votes need to be turned to get 75%?
A: 218 valid votes. need 139 votes, have 101 – so need 38 additional "yes" votes.*

3.2.7.2. *Harry W: please don't put anything more on Pluto.*

3.2.8. Recess at 21:02.**4. Tuesday, January 22, 2002 Morning Session.****4.1. Opening****4.1.1. Call to order at 08:15AM****4.1.2. Planning**

4.1.2.1. *Plan for the day – continuing comment resolution process.*

4.1.2.2. *Planning to split into small ad-hoc groups, and have each group work on specific comment areas.*

4.1.2.3. *We need to address comments of the most number of No voters.*

4.1.2.4. *Could we find people with a small number of ballot comments. Perhaps a group could focus on these specific no-votes that are easily resolvable?*

4.2. Ad Hoc Groups

4.2.1. Burst Acknowledgements

4.2.1.1. *There are several submissions on this topic. There are a number of comments, and concerns about implementability.*

4.2.1.2. *Members*

4.2.1.2.1. *Sid*

4.2.1.2.2. *Maarten - lead*

4.2.1.2.3. *Isaac*

4.2.1.2.4. *Yasu*

4.2.1.2.5. *Jay*

4.2.1.2.6. *Ohtani*

4.2.2. HCF Frame Exchange Rules

4.2.2.1. *We need to work on the proposed normative text in the group.*

4.2.2.2. *Members*

4.2.2.2.1. *JM - lead*

4.2.2.2.2. *Sri*

4.2.2.2.3. *Atul*

4.2.2.2.4. *Sun*

4.2.2.2.5. *Toru*

4.2.3. AP Mobility

4.2.3.1. *The issues of an IBSS. The HC isn't supported in an IBSS. The opportunity for QoS in an IBSS is limited. The suggestion is to "elect" an AP. Group will develop idea and normative text.*

4.2.3.2. *Members*

4.2.3.2.1. *Adrian - lead*

4.2.3.2.2. *John*

4.2.3.2.3. *Chao*

4.2.3.2.4. *Jeon*

4.2.3.2.5. *David*

4.2.3.2.6. *Minoru*

4.2.3.2.7. *Joerg*

4.2.3.2.8. *Toshi*

4.2.4. MAC Frame Formats

4.2.4.1. *Lack of description and use of QBSS load element, and error statistics element. Parameters and TSPEC granularity.*

4.2.4.2. *Members*

4.2.4.2.1. *John K*

4.2.4.2.2. *Bob*

4.2.4.2.3. *Khaled - Lead*

4.2.4.2.4. *Atul*

4.2.5. FEC4.2.5.1. *Members*4.2.5.1.1. *Ivan - lead*4.2.5.1.2. *Shugong*4.2.5.1.3. *Lior*4.2.5.1.4. *Ken*4.2.5.1.5. *Dor*4.2.5.1.6. *Fred*

4.2.5.2.

4.2.6. Special group for "Individual Ballot" resolution.4.2.6.1. *Members*4.2.6.1.1. *Matthew Sherman*4.2.6.1.2. *Harry*4.2.6.1.3. *Tim*4.2.6.1.4. *John*

4.2.6.2.

4.3. Recess for ad hoc working groups.**5. Tuesday Afternoon, January 22, 2002****5.1. Opening**

5.1.1. The session is called to order at 1:00PM by John Fakatselis

5.2. Review of Letter Ballot and Voting**5.2.1. Overview of process**5.2.1.1. *Review of Letter Ballot and Recirculation rules.*5.2.1.2. *We can have Recirculation ballots on a shorter time schedule.***5.2.2. Process for turning No Votes to Yes Votes**5.2.2.1. *We located 27 voters with a small number comments.*5.2.2.2. *We need to deal with changes to the draft causing Yes votes to change to No votes.*5.2.2.3. *We need to prioritize on compromises that gain consensus.***5.2.3. Discussion**5.2.3.1. *Ballot comments should focus on subjects that improve the standard, and not achieving on their personal "agenda".*5.2.3.2. *If a person abstains due to lack of expertise, how do we convert them? These people are looking at the rest of the group to say when the standard is ready. We will provide forms to allow the abstain votes to change.*5.2.3.3. *We have about 32 people with abstains.*

5.3. Consensus on key topics

5.3.1. Table of issues and opinions

5.3.1.1. Straw polls for each of the issues

5.3.1.1.1. Who votes no if it is mandatory

5.3.1.1.2. Who vote no if optional

5.3.1.1.3. Who votes no if not present

5.3.2. Discussion

5.3.2.1. Can we identify what features address certain applications. IE if we want to address an application, what pieces are needed. Also this applies to interoperability.

5.3.2.2. There are 64 voters and nearly voters in the room.

5.3.3. The Table of Straw Polls

	will vote "no" if it's mandatory	will vote "no" if it's optional	will vote "no" if it's not in
HCF polling	0	44	49
EDCF	5	15	26
CCI	21	19	7
Bridge portals	31	10	0
Side traffic	11	15	22
Burst ack	14	23	25
FEC	23	10	22
IBSS QoS	8	5	18
OBSS mitigation	9	12	13

5.3.4. Discussion

5.3.4.1. Motion to reconsider the motion on Bridge Portals yesterday.

5.3.4.1.1. Moved Matthew Sherman

5.3.4.1.2. Second Steve Williams

5.3.4.2. Discussion

5.3.4.2.1. In favor – The table speaks for itself.

5.3.4.2.2. No one against the motion to reconsider.

5.3.4.3. Vote on the motion to reconsider – Passes by unanimous consent

5.3.4.4. Motion: Instruct the editor to remove bridge portals and all references to bridge portals from the draft.

5.3.4.4.1. Discussion

5.3.4.4.1.1. The capability bit indicating the ability to handle WDS frames is useful

5.3.4.4.2. Motion to amend: Add "except for the capability bit indicating support for WDS"

5.3.4.4.2.1. Moved John Kowalski

5.3.4.4.2.2. Second Sid Schrum

5.3.4.4.2.3. Discussion on the amendment

5.3.4.4.2.3.1. Against the amendment – the problem with Bridge Portals is that it is incomplete. This is not clear what is being done with it.

5.3.4.4.2.3.2. The problem with the current standard is you don't know if an AP can support WDS. We need to add the explanation.

5.3.4.4.2.3.3. Against – the bit indicates bridge portals and implicitly should be considered separately.

5.3.4.4.2.4. Call the question on the amendment, without objection

5.3.4.4.2.5. Vote on the amendment. Fails 1:35:12

5.3.4.4.3. *Discussion on the main motion.*

5.3.4.4.3.1. Call the question (John/ Greg)

5.3.4.4.3.2. Vote on calling the question: passes 35:2:5

5.3.4.4.4. *Vote on the main motion: Passes 45:5:4*

5.4. Reports from Ad Hoc Groups

5.4.1. Burst ACK Group

- 5.4.1.1. *One proposal is in document 004r0*
- 5.4.1.2. *Another proposal in 014r0*
- 5.4.1.3. *Another in 063r1.*
- 5.4.1.4. *Commonality between 04 and 063. There is a partial solution for resource issues.*
- 5.4.1.5. *We need to look further at 014r0 to see if there is a more complete solution.*

5.4.2. HCF

- 5.4.2.1. *HCF Comment resolutions- Described in document 02/xxx (Matt Sherman)*
 - 5.4.2.1.1. *The vote on Bridge portals solves some comments*
 - 5.4.2.1.2. *One remaining comment from Weiyi Li. The comment is not specific enough to resolve.*
 - 5.4.2.1.3. *All other comments have proposed resolutions.*
- 5.4.2.2. *Specific Comment Resolutions*
 - 5.4.2.2.1. *Comment in Row 1: Suggested resolution to use fragmentation already in the standard.*
 - 5.4.2.2.1.1. *Resolution accepted without objection.*
 - 5.4.2.2.2. *Comment in Row 2*
 - 5.4.2.2.2.1. *Comment Accepted.*
 - 5.4.2.2.3. *Comment in Row 3: TXOP and ACK Rate. The group determined that the ACK rate is specified. The comment is not accepted as is. Resolution is to create a clarification.*
 - 5.4.2.2.3.1. *Resolution accepted without objection*
 - 5.4.2.2.4. *Comment in Row 4: Multi Rate behavior in CFB. The group was unsure what this meant. If we can't locate the person, we will reject the comment seeking clarification.*

- 5.4.2.2.4.1. Resolution accepted without objection
- 5.4.2.2.5. *Comment in Row 5: regarding bridge portals. Comment accepted – bridge portals have been deleted by previous motion.*
 - 5.4.2.2.5.1. Resolution accepted without objection
- 5.4.2.2.6. *Comment in row 6,7,8; No action, not part of No Vote.*
- 5.4.2.2.7. *Comment in row 9: Accepted Resolution – instruct the editor define MIB values. Comment Accepted.*
 - 5.4.2.2.7.1. Resolution accepted without objection
- 5.4.2.2.8. *Comment in Row 10: Still requires resolution. Regarding collision of CF-poll and backoff procedure. This is in the area of OBSS. Comment accepted, no action required. There is additional work on OBSS under consideration.*
 - 5.4.2.2.8.1. Resolution accepted without objection
- 5.4.2.2.9. *Comment in row 11: Clarification of definition of superframe. Accepted – asking editor to clarify*
 - 5.4.2.2.9.1. Resolution accepted without objection
- 5.4.2.3. *Summary 3 rejected, 5 accepted, 4 no-action.*
- 5.4.2.4. *Other comments from Document 060r0 (Jin Meng) relating to EDCF access.*
 - 5.4.2.4.1. *Comment in Row 8: EDCF fewer than 8 queues. Resolution: use the priority of the frame at the head of the queue.*

5.5. Closing

5.5.1. Next session tomorrow at 1:00PM

5.5.2. Leaders of ad-hoc groups to meet at 9:30AM tomorrow to work on process.

5.5.3. The straw poll indicates a possible path to resolution

- 5.5.3.1. *We need to look at CCI, IBSS QoS, and OBSS.*

5.5.4. Announcements

- 5.5.4.1. *Burst ACK ad hoc will meet at 7PM.*
- 5.5.4.2. *The editing team will meet now.*

5.6. Recess at 3:00PM**6. Wednesday Afternoon, January 23, 2002****6.1. Opening****6.1.1. Call to order at 1:10PM****6.1.2. Announcements**

6.1.2.1. *We will have the new draft on the server by 3:30PM tomorrow. Tomorrow evening we will have the presentation of the draft*

6.1.2.2. *Depending on the vote change results, we will attempt to initiate a new letter ballot, or a recirculation ballot.*

6.1.2.3. *Vote Change response forms will be collected until tomorrow at 7:30PM.*

6.1.2.4. *The editorial team will meet after this meeting.*

6.1.3. Discussion and Comments

6.1.3.1. *What is the chairs feeling on needing to produce SDL before we can pass a letter ballot. Yes, that is a requirement.*

6.1.3.2. *When does the draft need to be on the server? By 4:30? The draft needs to be available 1 hour before a motion to accept it. The chair believes the draft must be available by 6:30 tomorrow, for presentation at 7:30PM.*

6.1.3.3. *The chair points the members to Draft 2.0a, which contains editorial updates.*

6.1.3.4. *Any normative text must be added according to the 4 hour rule.*

6.1.3.5. *The chair will investigate the details of the rules.*

6.1.4. Review of list of issues

6.1.4.1. *AP Mobility*

6.1.4.2. *FEC*

6.1.4.3. *Burst ACK*

6.1.4.4. *HCF*

6.2. Presentations**6.2.1. Report from AP Mobility Group**

6.2.1.1. *New version of document, added an informative section in 5.1.*

6.2.1.2. *Document 01/066r2 "AP Mobility Mechanism", Adrian Stephens*

6.2.1.3. *Overview*

6.2.1.3.1. *IBSS limits power saving, and is less reliable protocol.*

6.2.1.3.2. *There is no support for the HC in the IBSS. The HC provides better QoS.*

- 6.2.1.3.3. *Issue with TGi – how to create security association in the IBSS case. If this is accepted, it makes the TGi work to resolve this much easier.*
- 6.2.1.3.4. *Similarly, a dynamic HC would help with TGh DFS control as well.*
- 6.2.1.3.5. *Define a new term “QoS AP Capable Station”, QAPCS.*
 - 6.2.1.3.5.1. *Why restrict to QoS – no reason. The FEC option is not tied to QoS, for example.*
- 6.2.1.3.6. *QAPCS only operates when there are no legacy APs present. The “most capable” station is elected to be the AP.*
- 6.2.1.3.7. *Ranking is determined, and the most capable will take over when it appears.*
- 6.2.1.3.8. *We don’t try to solve the hidden node problems.*
- 6.2.1.3.9. *Switching between APs does not preserve state. (It is the same as a roaming event)*
- 6.2.1.3.10. *Define QAPCS parameter set element. Not transmitted by static APs.*
- 6.2.1.3.11. *Making all stations be QAPCS, you are guaranteed that you always have in infrastructure network. A radical view, not proposed here.*
- 6.2.1.3.12. *Review of behavior and ranking mechanisms.*
- 6.2.1.4. *Discussion*
 - 6.2.1.4.1. *How do you create the equivalent situation as two APs? You don’t.*
 - 6.2.1.4.2. *Does the station have access to a portal? Does that enter into the ranking? This does not enter inter-bss bridging. Bandwidth to infrastructure is considered in the ranking.*
 - 6.2.1.4.3. *Would like to see hidden nodes specifically addressed*
 - 6.2.1.4.4. *Concern that this protocol could create havoc with TGf. If APs with DS connection participate. A solution would be requiring any AP with a portal connection to the DS appears as a legacy AP.*
 - 6.2.1.4.5. *Not expecting the networks to be highly dynamic with frequent changes of AP. Mobility is seen only as a response to failure. TGf must cope with this failure and recovery scenario.*
 - 6.2.1.4.6. *How is this mechanism activated? This still needs to be worked out.*

6.3. Fixed Time Agenda

6.3.1. Postponed Motion

6.3.1.1. *Move to reconsider the motion “instruct the editor to remove the CCI mechanism from the draft and permit RR frames during any TXOP.”*

6.3.1.1.1. *Moved John K*

6.3.1.1.2. *Second Williams*6.3.1.2. *Discussion*

6.3.1.2.1. *Suggests that the straw poll indicates that the CCI should be removed.*

6.3.1.2.2. *This motion has been rehashed multiple times, we should drop it.*

6.3.1.2.3. *Supports reconsideration.*

6.3.1.2.4. *half agrees with the chart – every case results in some people unhappy. Doesn't agree that this should be reconsidered. Both mechanisms are needed to reach consensus.*

6.3.1.2.5. *Feels that an inclusive draft does not bring consensus.*

6.3.1.2.6. *Calls the question (Duncan / Anil)*

6.3.1.2.6.1. *Vote on calling the question: passes 58:2:3*

6.3.1.3. *Vote on the motion to reconsider: Passes 48:17:8*6.3.1.4. *Motion on the floor: "Instruct the editor to remove the CCI mechanism from the draft and permit RR frames during any TXOP"*6.3.1.4.1. *Discussion*

6.3.1.4.1.1. *Against the motion – this is the wrong motion. The feedback to the RR is in the CC, there would be no feedback. This motion would create a problem that is in the editors power to resolve. There are a variety of usage models that are supported by TGe. One common thread is the need to obtain TXOPs with bounded latencies. Any mechanism for reservation requests must be evaluated under conditions of heavy load but not overload. In that case, There was an unsolved problem in the original MAC development that would have been solved by CC/RR. From the EDCF point of view, in the case of high load. The backoff is based on the time when the network is idle. Under normal 11b DCF timing, the average decrement is 1.5 per arbitration. If contending with the highest EDCF priority, there would be 5 transmissions intervening before an RR can be sent. In the 11a environment, it is closer to 7 intervening transmissions. If the contenders are high priority as well, the result is excessive collision and backoff. The minimum solution would be to allow RR be sent only at the highest priority. But that does not allow any priority above legacy. Against the motion.*

6.3.1.4.1.2. *RR is the only frame that is sent with CCI. Would have to send in every CCI. Still favors the motion.*

6.3.1.4.1.3. Would RR frames be sent in response to a poll from the AP? Requests a re-phrasing of the motion.

6.3.1.4.2. *Motion to amend: add following the word "draft" the text "...consisting of the generation of CC frames by an AP..". The amended motion would read: "Instruct the editor to remove the CCI mechanism from the draft consisting of the generation of CC frames by an AP and permit RR frames be sent during any TXOP.*

6.3.1.4.2.1. Moved Mishra

6.3.1.4.2.2. Second Williams

6.3.1.4.2.3. Discussion

6.3.1.4.2.3.1. This makes the problems of the main motion worse. This explicitly says remove the CC frame without providing feedback. Against the amendment and the motion.

6.3.1.4.2.4. Motion to amend the amendment: Add to the amendment: "add the text "and the generation of RR frames" and strike the text "and permit RR frames to be sent in any TXOP"

6.3.1.4.2.4.1. Moved John K

6.3.1.4.2.4.2. Second Sri

6.3.1.4.2.4.3. Call the Question (Duncan/Srini) Vote on calling the question:

6.3.1.4.2.4.4.

6.3.1.4.2.5. Vote on the motion to amend the amendment: Passes 43:14:14

6.3.1.4.3. *Motion on the floor: Motion to amend: add following the word "draft: the text "...consisting of the generation of CC frames by an AP" and add the text "and the generation of RR frames" and strike the text "and permit RR frames to be sent in an TXOP*

6.3.1.4.3.1. Discussion

6.3.1.4.3.1.1. Call the question (Duncan / Srini) 54:2:14

6.3.1.4.3.2. Vote on the motion to amend: Motion passes 47:16:11

6.3.1.4.4.

6.3.1.5. *Motion on the floor: "Instruct the editor to remove the CCI mechanism from the draft consisting of the generation of CC frames by an AP and the generation of RR frames."*

6.3.1.5.1. *Discussion*

6.3.1.5.1.1. Concerned about crafting this on the fly.

6.3.1.5.1.2. Calls the question (Sid / John) Vote on calling the question: fails 41:28:10.

Recess at 3:00PM until 3:30PM.

6.3.1.5.1.3. Think CC/RR has value, but other would prefer to use EDCF mechanism. Looking for some compromise. Suggests that also simplifying the EDCF mechanism would move us forward. If we took out CC/RR and also take out persistence factor in EDCF, would people be in favor?

6.3.1.5.1.4. These two items have nothing in common. They should be two motions.

6.3.1.5.1.5. Amendments unrelated to the original motion are not allowed. There is no motion to amend.

6.3.1.5.1.6. Can we simplify on two fronts in the spirit of compromise. Suggests a straw poll. Voting members only.

6.3.1.5.1.7. What should be asked is who's vote would be different if it was done this way.

6.3.1.5.1.8. Straw Poll: Should we find a procedure to take out CC/RR and persistence factor together? Who would be in favor? Result of straw poll 44:9:15.

6.3.1.5.1.9. Parliamentary enquiry – how could this be achieved? Need time to determine this.

6.3.1.5.1.10. In favor of the motion, and the combination of simplification. The CCI mechanism has been around for a year. It is clear that more people would vote no if CCI is in the standard. Also suggests removal of persistence factors as a simplification.

6.3.1.5.2. *Motion to amend: replace the word "remove" with "simplify the draft by removing", and add "...and remove persistence factors and all references to persistence factors from the draft".*

6.3.1.5.2.1. Moved Kitchin

6.3.1.5.2.1.1. Parliamentary enquiry – how is this germane to the original motion? The spirit of the original motion is simplifying the draft.

6.3.1.5.2.1.2. The chair suggests that the motion to amend be allowed.

6.3.1.5.2.2. Second Kowalski

6.3.1.5.2.3. Discussion

6.3.1.5.2.3.1. persistence factor is optional – this is not simplifying anything. Persistence factor has value, as does CCI.

6.3.1.5.2.3.2. Supports the motion

6.3.1.5.2.3.3. This will result in more bundling of unrelated subjects. Against the motion.

6.3.1.5.2.3.4. Quick and dirty technologies seem to win.

6.3.1.5.2.3.5. This is unrelated to the original motion.

6.3.1.5.2.3.6. Supports the motion. Does not think that this is unrelated, they are the same genre. They are both contention mechanisms.

6.3.1.5.2.3.7. Call the question (greg C/ Dave) without objection

6.3.1.5.2.4. Vote on the amendment: passes 42:24:7

6.3.1.6. *Motion on the floor: "Instruct the editor to simplify the draft by removing the CCI mechanism from the draft consisting of the generation of CC frames by an AP and the generation of RR frames and remove persistence factors and all references to persistence factors from the draft"*

6.3.1.6.1. *Motion to divide: 1) "Instruct the editor to simplify the draft by removing the CCI mechanism from the draft consisting of the generation of CC frames by an AP and the generation of RR frames 2) "Instruct the editor to simplify the draft by removing persistence factors and all references to persistence factors from the draft"*

6.3.1.6.2. Vote on the motion to divide: passes 44:9:15.

6.3.1.7. *Motion on the floor: "Instruct the editor to simplify the draft by removing the CCI mechanism from the draft consisting of the generation of CC frames by an AP and the generation of RR frames"*

6.3.1.7.1. *Discussion*

6.3.1.7.1.1. There is a minority that believe the CC/RR mechanism is useful. In order to move forward we have to leave this in. Against the motion. Lets finish this now.

6.3.1.7.1.2. call the question (john / Dave) vote on calling the question: passes 44:4:19

6.3.1.7.2. *Vote on the motion on the floor: Fails 48:22:11.*

6.3.1.8. *Motion on the floor: "Instruct the editor to simplify the draft by removing persistence factors and all references to persistence factors from the draft"*

6.3.1.8.1. *Discussion*

6.3.1.8.1.1. Against the motion. This mechanism modifies the rate at which backoffs occur. The goal is to allow adjustment of the rate the backoff window increases, with factors other than powers of 2. It is not mandatory – you can round to any value you want. It can be made equivalent to legacy. It doesn't have to be implemented.

6.3.1.8.1.2. In favor – thinks binary exponential backoff is easier to implement.

6.3.1.8.1.3. We need to simplify the standard. We want to make the MAC a commodity. For the motion.

6.3.1.8.1.4. The complexity is necessary – it makes the standard good, and gives good performance and

features. Against the motion. The complexity is there for a good reason.
 6.3.1.8.1.5. Call the question (harry / srini) without objection

6.3.1.8.2. Vote on the motion on the floor: Passes 68:12:8

6.4. Presentations, continued

6.4.1. AP Mobility

6.4.1.1. A new version will be put on the server. Will delay making a motion until 10:30AM tomorrow.

6.4.2. Burst ACK

6.4.2.1. Report

6.4.2.1.1. We had progress on the burst ack compromise. It was on the server in Venus\To_Doc_Keeper.

6.4.2.1.2. Meet in Ballroom B at 5:30 to continue work.

6.4.2.2. Presentation

6.4.2.2.1. Document 02/004r2, Jin Meng Ho

6.4.2.2.2. Proposal addresses buffer resource issue and re-ordering and delay issue.

6.4.2.3. Discussion

6.4.2.3.1. Did you clarify the questions about whether a sending station could send additional bursts before getting ack for first burst. Yes – it depends on the buffer size status. The transmitter knows how many based on the buffer size of the receiver.

6.4.2.3.2. Did you fix it so when the receiver has calculated the burst ack, it could be sent on any TXOP, not just a polled txop? We use the wait field to buy the receiver more time.

6.4.2.3.3. Still think we need to look at the null transfer handshake to establish the queue state. If the sender learns there are resources, are they committed to my stream? The intention is the resource would be dedicated.

6.4.2.3.4. Is there an indication of the size of the burst likely to come in? The receiver sends what it is capable of, and the transmitter is expected to honor it.

6.4.2.4. Motion: Instruct the editor to remove the concept of burst ack and all related text.

6.4.2.4.1. Moved Anil
 6.4.2.4.2. Second Maarten.
 6.4.2.4.3. Discussion

6.4.2.4.3.1. There are a lot of difficulties with the concept and are not clearly specified. Every time we resolve an issue, more show up. As specified, the concept is too complex and not fully specified.

6.4.2.4.3.2. This is premature. There has been work done on solving this problem.

6.4.2.4.3.3. Move to table this motion.

6.4.2.4.3.3.1.	Duncan / Maarten
6.4.2.4.3.3.2.	Vote on tabling: passes 47:2:8

- 6.4.2.5. *Comment resolutions on Burst Ack*
- 6.4.2.5.1.1. Document posted on VENUS2\Submissions\Working Groups\TGe. "Priority Comments – Burst ACK - maarten".
- 6.4.2.5.2. *Comment 1: Accepted, resolution based on draft document not yet accepted.*
- 6.4.2.5.2.1. Resolution accepted without objection
- 6.4.2.5.3. *Comment 2: really a clarification, not part of no vote. Comment is accepted, second interpretation is correct.*
- 6.4.2.5.3.1. Resolution accepted without objection
- 6.4.2.5.4. *Comment 3: accepted*
- 6.4.2.5.4.1. Resolution accepted without objection
- 6.4.2.5.5. *Comment 4: accepted*
- 6.4.2.5.5.1. Resolution accepted without objection
- 6.4.2.5.6. *Comment 5: (burst ack in table 20.1) accepted.*
- 6.4.2.5.6.1. Resolution accepted without objection
- 6.4.2.5.7. *Comment 6: Text for burst ack after table 20.1 missing. Accepted.*
- 6.4.2.5.7.1. Resolution accepted without objection
- 6.4.2.5.8. *Comment 7: Delayed ACK. obsolete text. Accepted as is.*
- 6.4.2.5.8.1. Resolution accepted without objection
- 6.4.2.5.9. *Comment 8: error in caption 21.3. Accepted*
- 6.4.2.5.9.1. Resolution accepted without objection
- 6.4.2.5.10. *Comment 9: ack bitmap 32 octets. Change to 2 octets. Rejected – 32 is needed for fragmentation.*
- 6.4.2.5.10.1. The No Voter accepts the resolution.
- 6.4.2.5.10.2. Resolution accepted without objection
- 6.4.2.5.11. *Comment 10: Burst Ack should be removed for FEC frames. Rejected because burst ack may be used for FEC. Burst ACK is not tied to FEC.*
- 6.4.2.5.11.1. This is part of the tabled motion.

6.4.3. Announcements

- 6.4.3.1. *Draft to be on the server by 4:30 tomorrow*
- 6.4.3.2. *Sub-editors are requested to remain here after this session.*

6.4.4. MAC Frames Group

- 6.4.4.1.1.1. Document "Priority Comments – MAC Frames – Khaled" Will go through comments referred to the group:
- 6.4.4.2. *Comment resolutions*
- 6.4.4.2.1. *Comment 1: Traffic specification element. Asking group for response. Defer resolution.*

- 6.4.4.2.2. *Comment 4: 9.2.10 MinPhyRate. Asking for clarification. The editor clarifies that it is the lowest mandatory rate for the current PHY. This is because an adjacent BSS might not use the same basic rate set. Resolution: reject because this is for OBSS case.*
- 6.4.4.2.2.1. Resolution accepted without objection
- 6.4.4.2.3. *Comment 12: Action Frame Format. Resolution – accept, editor will clarify text.*
- 6.4.4.2.3.1. Resolution accepted without objection
- 6.4.4.2.4. *Comment 18: TGi use of element 35. Resolve in Joint Meeting tomorrow.*
- 6.4.4.2.5. *Comment 5: two definitions of D2. Accepted – instruct the editor to look at it. The editor says the source figure is not editable. Accepted.*
- 6.4.4.2.5.1. Resolution accepted without objection
- 6.4.4.2.6. *Comment 6: no restriction of TC in response to poll. Pending proposal would address this issue. Defer*
- 6.4.4.2.7. *Comment 7: DialogToken numbers. Resolution: Reject. Local Significance only.*
- 6.4.4.2.7.1. Resolution accepted without objection

6.4.5. Announcement

- 6.4.5.1. *Burst ACK team will meet now.*

6.4.6. Recess

7. Joint session with TGi

8:00 am - Joint session with TGe

Meeting called to order at 8:17am

Chair:

Purpose: A forum to discuss issues presented between the TGi and TGe groups. Meant to be an open discussion.

Discussion:

Comment: One and a half years ago IE space between TGi & TGe was allocated. TGe is encroaching on TGi space. TGe/i should move their IE space so we don't overlap. How are we to move forward?

Chair: Catalog current issues. Start discussion between editors and have them report back to their respective groups.

Comment: QoS Traffic Class. Issues with burst ACK within traffic classes and replay attacks. How do we deal with key mgt for sidestream traffic without going to manual configuration?

Comment: For QoS, we need to deal with the secure fast re-authentication. Mutual authentication with AP when roaming. Whatever solution we come up with must be independent of infrastructure mode.

Chair: There has been a lot of work done on rekeying. Is there justification for follow-up?

Comment: Microsoft document on rekeying would be sufficient if secure.

Comment: There is an issue with fast authentication when roaming – It is nearly impossible to perform a fast reauthentication without being noticeable to the user. Adopt a model used with cell

phones – associated with 3 towers at once. Perform some background work with new AP before making the switch.

Chair: The “make before break” concept has been discussed before. Currently, you cannot do that due to Association rules.

Comment: The reason this hasn’t been looked at up till now is because of the Association rule. Perform a “pre-Assoc” to not violate the rule.

Comment: There is currently a proposal in TGe (doc 02/066r2) where stations are capable of becoming an AP. TGi needs to be involved with that effort to see if there are security issues related to this.

Comment: The security issues with this seem to be great. The AP gets to see all traffic in plaintext. Attacker will claim to be new AP. We will loose all security.

Comment: IE’s 32, 35 are being used by both TGe & TGi.

Chair: Jesse brought that up as the first issue. Can we solve this right now?

Jesse: No, because of coordination with other task groups.

Chair: since we are in a joint e/i mtg, let’s fix it right now.

Comment: At WG Closing plenary, ask the WG to assign a block for each TG.

Motion:

Move that blocks of Element ID Codes, Status Codes, and Reason Codes be allocated to each Task Group whose PAR includes MAC changes to allow non-conflicting code assignments working in parallel. Upon completion of any PAR, allocated but unassigned codes will revert to being reserved.

Moved by: Michael Fischer

Second: Jesse Walker

Discussion: As the motion stands, it is unilateral between the two task groups. I don’t think we have the power to do that.

Comment: Shouldn’t we state who would make these allocations?

Chair: It is assumed to be the editors. Welcome to make amendment.

Comment: I would like to amend the motion (text drafted).

PoI: Can I ask if adding the IE’s is technical or editorial?

Comment: Editorial now because we are not in SB process. Reduces probability of editorial becoming a technical one.

Motion to Amend:

Allocation be done by WG chair and this motion if passed be taken on behalf of this joint

TGi/TGe group to the Full WG for approval.Moved by: Alan Chickinsky

Second: Jesse Walker

Vote: 45-1-6 Passes

Comment: The motion indicates that these are going to be block assignments. We did this initially and we are running out. May it would be better to allocate codes as needed and have the list maintained by a single source (e.g. Harry).

Comment: More blocks can be allocated to each TG later. Not restricted to a single block.

Comment: Spending too much time on discussing

Call the question: Duncan

Second: Michael Fischer
No objection

Motion:

Move that blocks of Element ID Codes, Status Codes, and Reason Codes be allocated to each Task Group whose PAR includes MAC changes to allow non-conflicting code assignments working in parallel. Upon completion of any PAR, allocated but unassigned codes will revert to being reserved. Allocation be done by WG chair and this motion if passed be taken on behalf of this joint TGi/TGe group to the Full WG for approval.

Moved by: Michael Fischer

Second: Jesse Walker

Vote: 48-0-3 Passes

Chair: I will meet with the TGi/TGe editors to prepare a motion for the Full WG mtg.

Chair: Any further discussion. None

Chair: Next agenda item is the issue with Burst Acknowledgement.

Comment: In Austin, Traffic Categories (TC) were discussed. Replay prevention would work as long a sequence number was allocated per TC. Then we learned about Burst Ack's. Retransmission of an older sequence number would be seen as a replay attack. A sequence number window may resolve this. What is an acceptable size for the window?

Comment: Since Burst Ack is at such a low level of the MAC, why not perform security check after the full burst is received?

Comment: Skipped sequence numbers will be buffered until previous (missing) numbers are received.

Comment: We are comfortable with this then.

Comment: Is Burst mode intended to go into legacy HW?

Comment: This is dependent upon legacy HW being capable of recognizing new frame types.

Comment: TKIP is dependent on assumption that it can be handled by legacy HW. Burst mode must be implemented below security.

Comment: The Burst ACK mechanism was proposed to resolve issues with previous Delayed ACK mechanism.

Comment: There is a mechanism in place for legacy HW that would violate security.

Comment: Logically, QoS would lie under Security. This is an implementation issue.

Comment: Burst Ack as originally defined covering 16 MSDU's. Has that changed?

Comment: A change was made to support up to 8 MSDU's which results in a maximum of 128 MPDU's, or an option to support up to 128 unfragmented MSDU's.

Comment: Within reassembly, the MSDU's are in order. Out of order fragments will be rejected. I would like to see a picture showing structure within the MAC.

Comment: Agree, the diagram is needed. It needs to be a coordinated effort between all groups. An ad-hoc group between MAC TG's would appropriate.

Comment: These Acks are at the MSDU, where others are at MPDU level. I now have more concerns regarding security.

Comment: The Acks are logically still at the MPDU level.

Sidestream Discussion:

Sidestream was originally treated like ad-hoc. We learned that AP is to play a role. We would like an overview from TGe on sidestream communications.

Chair: any volunteers?

Comment: Term "Sidestream" does not appear in TGe draft. If both stations are associated to the same AP, why is there a security concern?

Comment: Sidestream overview: AP governs all sidestream traffic. STA indicates to AP that it is capable of sidestream. AP can choose to not allow the sidestream channel to occur.

Comment: are broadcasts allowed in sidestream traffic?

Comment: NO, unicast only.

Comment: Prohibiting use for MC/BC is quite useful. The keys are established between the stations and AP. We need a pairwise key between the stations involved in the sidestream traffic. Perhaps the AP could distribute the keys. Perhaps an ad hoc group could be formed to discuss this issue.

Chair: any further issues?

None:

Chair: Any objection to recessing to 10:30 and the people interested in forming an ad hoc to discuss these issues meet here?

No objections.

Recessed at 9:33am

8. Thursday Morning, January 24, 2002

8.1. Opening

8.1.1. The meeting is called to order by John Fakatselis at 10:35AM.

8.1.2. Announcements

8.1.2.1. *Between 3:30 to 5:30 we have AV Ad Hoc Group.*

8.1.2.2. *Final session tonight*

8.1.2.3. *Draft review at 7:00PM*

8.2. Comment resolution process

8.2.1.1. *We have not made sufficient progress in resolving comments to go to a new Letter Ballot.*

8.2.1.2. *We need to consider improvements in the process. We have 26 hours and 2000 comments. We cannot resolve them all.*

8.2.2. Discussion

8.2.2.1. *It would be nice to get a consistent updated document as quickly as possible after this meeting.*

8.2.2.2. *The editor says that it is not possible to have a worthwhile draft at 4:30 today. If the objective is to address*

comments, let's focus on resolving comments, and later incorporate into the draft. Until the rules change to require the update by 4:30 Thursday, we will never be able to have a high quality draft during the week.

- 8.2.2.3. *What needs to change in the rules?*
- 8.2.2.4. *We could not have done the current MAC under the current rules. When D1.0 was released, we had a pre-draft. Significant changes were adopted in the meeting. The vote at the WG to submit a LB based on 1.0 incorporating the technical changes during the meeting. The editing of the changes needs to occur after the meeting.*
- 8.2.2.5. *Perhaps a different standard is needed for the first ballot, but re-ballots need to be changed.*
- 8.2.2.6. *Propose that we approve changes to the draft, and the changes incorporated and issued for ballot after the meeting.*
- 8.2.2.7. *There is a long process to change the 802.11 operating rules.*
- 8.2.2.8. *There are two issues, 1) to improve the process, 2) how to work with the existing process to achieve our goal. Attempting to get 75% in one week is not practical.*
- 8.2.2.9. *The chair would like to entertain thoughts of how to move forward between meetings.*
- 8.2.2.10. *We need to empower the editor to implement all editorial comments between meetings. (That is not needed because the editor is already empowered).*
- 8.2.2.11. *The simplest change would allow the ballot to occur based on incorporation of accepted text, subject to the ballot occurring when the editor has prepared a document with the approved changes.*
- 8.2.2.12. *We might be able to have a draft by March, if we don't make any significant changes.*
- 8.2.2.13. *We need to change the rules so that we can go to letter ballot when we have adopted technical changes in a document, and the editor would merge them later.*
- 8.2.2.14. *We need to make a motion for the change of rules on behalf of TGe.*
- | |
|---|
| 8.2.2.15. <i>Motion: To direct the chair of TGe to make a motion at the next WG Plenary meeting to modify the operating rules to allow for balloting when all the approved changes are available for the draft, but not in merged form.</i> |
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|-------------------------------------|
| 8.2.2.15.1. <i>Moved Sid Schrum</i> |
| 8.2.2.15.2. <i>Second Duncan</i> |
- | |
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| 8.2.2.16. <i>Discussion</i> |
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| 8.2.2.16.1. <i>None</i> |
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- | |
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| 8.2.2.17. <i>The motion passes with unanimous consent.</i> |
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8.2.2.18. *The editor is and should be empowered to make editorial changes without explicit approval. The previous motion enables this. The editor will still do his job and take care of editorial issues.*

8.2.2.19. *Motion: additionally instruct the chair to include in proposed rule change empowerment of the editor to make editorial changes prior to the letter ballot*

8.2.2.19.1. *Moved Adrian Stephens*

8.2.2.19.2. *Second Duncan Kitchin*

8.2.2.20. *The motion passes with unanimous consent*

8.3. Reports from Ad Hoc Groups

8.3.1. MAC Frames

8.3.1.1. Comment Resolutions

8.3.1.1.1. *Comment 6: restrict polls to traffic category. Addressed by pending proposal.*

8.3.1.2. Presentation of related proposal

8.3.1.2.1. *Document 02/022r1 is presented.*

8.3.1.2.2. Discussion

8.3.1.2.2.1. *Can the same thing be done without this RTID bit? Why constrain the traffic? It is desirable to request a frame at a certain time. Requesting a specific TC achieves that.*

8.3.1.2.2.2. *Believes the station should decide what of frame to send. The channel is set aside anyway, why not let the STA send something.*

8.3.1.2.2.3. *Is there any data to show that this is more efficient?*

8.3.1.2.2.4. *What is the link between this proposal and regular voice data at intervals. That should be guaranteed because it is the highest queue.*

8.3.1.2.2.5. *The QoS Null response included queue state. Does this limit the queue status response? It should allow other queues, since you know the status of the addressed queue implicitly.*

8.3.1.2.2.6. *This is a significant change to implementation. The station must maintain multiple queues with SIFS access. Wants to see data to show the benefit in efficiency.*

8.3.1.2.2.7. *Simulations are available in previously submitted documents. From the previous meeting, on HCF simulations.*

8.3.1.2.2.8. *The response needs to be corrected to a QoS Null frame.*

8.3.1.2.2.9. *If this mechanism is to be included, a bit is better. There is room in QoS control field. The RTID concept is more flexible. There is no way we can mandate an implementation to behave this way. It would cause more nulls.*

8.3.1.2.2.10. This is better handled by limiting the length of the TXOP. Then voice would fit in the small TXOP, but a data control field would also.

8.3.1.2.3. *Motion: To direct the editor to modify the draft standard (section 7.1) to include an RTID bit in the QoS Control field with the following functionality (described in document 022).*

8.3.1.2.3.1. Moved khaled

8.3.1.2.3.2. Second Matt

8.3.1.2.4. *Discussion*

8.3.1.2.4.1. What is included as part of the motion?
Slide 6 and 7.

8.3.1.2.4.2. Against the motion. The bit should be used for No-Ack.

8.3.1.2.4.3. Granting small TXOPs is the best way to request voice frames.

8.3.1.2.4.4. Against the motion – if a station signals for a periodic poll, it makes sense to put the TSID in the flow. That serves the purpose.

8.3.1.2.4.5. Against the motion – needs to see data that it helps. Also, this implies the AP has to guess what the station wants to send. Why not let the station decide?

8.3.1.2.4.6. Call the question (Duncan / Kevin) passes
27:3:8

8.3.1.2.5. *Vote on the motion: Fails 13:21:8*

8.3.1.2.6. *the document with simulations is 01/613*

8.4. Recess

9. Thursday Evening, January 24, 2002

9.1. Opening

9.1.1.1. *The meeting is called to order by John Fakatselis at 6:45.*

9.1.2. Agenda

9.1.2.1. *Motion: to modify the agenda to eliminate the special order from the TGe agenda..*

9.1.2.1.1. *Move Matt Sherman*

9.1.2.1.2. *Second Srin*

9.1.2.1.3. *Discussion*

9.1.2.1.4. This is for reviewing the draft for letter ballot. We do not have a draft.

9.1.2.1.5. *Motion passes with unanimous consent.*

9.2. Presentations

9.2.1. AIFS

9.2.1.1. *Move to adopt the changes to the draft in 01/408r4 slides 20, 21, 22.*

9.2.1.1.1. *Moved Matt Sherman*

9.2.1.2. *Presentation of 01/408r4.*

9.2.1.2.1. *Since first presentation Tuesday, corrections have been made. The version went from r3 to r4.*

9.2.1.2.2. *Definition of AIFS today, timing diagram in draft, fig 58.1.*

9.2.1.2.3. *Deference and backoff are two different things. First backoff is currently during DIFS.*

9.2.1.2.4. *Suggests changes so that DIFS and AIFS have same timing relationships. First backoff slot is after DIFS.*

9.2.1.2.5. *Diagram is for AIFS=2.*

9.2.1.2.6. *Suggests removal of fig 58.1 and replacing with modified figure 58.*

9.2.1.2.7. *Backoff should be at least 1 to insure no collisions with HC.*

9.2.1.3. *Discussion*

9.2.1.3.1. *Thought the lowest AIFS was DIFS, intended for highest priority? The problem is there is no class equal to legacy – either above or below.*

9.2.1.3.2. *Supports the idea. Assuming the same cwmin and max as legacy. This change allows AIFS = PIFS for better than legacy, DIFS = Legacy. A good idea.*

9.2.1.3.3. *This was one objection to EDCF.*

9.2.1.4. *Back to the motion*

9.2.1.4.1. *Seconded Sri*

9.2.1.5. *Discussion*

9.2.1.5.1. *Supports the motion – provides true legacy backward compatibility*

9.2.1.5.2. *In favor of the motion – it is a problem if we don't have a legacy compatible AIFS*

9.2.1.5.3. *Call the question without objection.*

9.2.1.6. *Vote on the motion: Passes 25:1:2*

9.3. Reports from Ad Hoc Groups

9.3.1. Burst Ack group

9.3.1.1. *Motion: to replace the frame formats figures and text pertaining to the burst acknowledgement mechanism in the draft with those provided in document 02/004r4a.*

9.3.1.1.1. *Moved Maarten*

9.3.1.2. *Presentation of document 02/004r4a.*

- 9.3.1.2.1. *“Normative Text for Burst Ack”*
- 9.3.1.2.2. *Added a mechanism to respond with either a direct burst ack, or a regular ack later followed with a burst ack.*
- 9.3.1.2.3. *Added bits for reordering buffer size, measured in MSDUs.*
- 9.3.1.2.4. *Clause 9 – 10 have been updated, require that resources are available before initiating a burst ack.*

9.3.1.3. *Discussion*

- 9.3.1.3.1. *Burst ack response will only be sent after a burst ack request.*

9.3.1.4. *Back to the motion:*

- 9.3.1.4.1. *Suggestion to add the following text to the motion: with the following text added at the end of page 4: “In addition to this, the receiving QSTA may send unsolicited BurstAck response frames to the transmitting QSTA which, if received correctly, shall be acknowledged*
- 9.3.1.4.2. *Seconded – Jie*

9.3.1.5. *Discussion*

- 9.3.1.5.1. *Against the motion, without the suggested text.*
- 9.3.1.5.2. *Motion to amend the motion by adding: adding with the following text added at the end of page 4: “In addition to this, the receiving QSTA may send unsolicited BurstAck response frames to the transmitting QSTA which, if received correctly, shall be acknowledged.*
- 9.3.1.5.3. *Moved Gubbi*
- 9.3.1.5.4. *Second Fischer*
- 9.3.1.5.5. *Discussion*

- 9.3.1.5.5.1. *Against – this brings back problems of burst ack again. Need time to assess impact.*
- 9.3.1.5.5.2. *For the motion . doesn’t see any implementation complexity added by the amendment. If time is needed, offers to table.*

9.3.1.5.6. *Vote on the amendment: Fails 3:20:11*

9.3.1.6. *Motion on the floor: to replace the frame format figures and text pertaining to the burst acknowledgement mechanism in the draft with those provided in document 02/004r4a.*

9.3.1.6.1. *Discussion*

- 9.3.1.6.1.1. *This takes away the freedom of the receiver to release its buffers. Doesn’t see why this is necessary.*
- 9.3.1.6.1.2. *For the motion – the group has made a tremendous effort to address the concerns in the comments on the burst ack mechanism. This issue has been discussed, including the amendment. Everyone agrees it is not a good idea at this time.*

9.3.1.6.1.3. Call the question (Maarten / John) Vote on calling the question: passes 31:1:5

9.3.1.6.2. Vote on the motion: Passes 31:0:4

9.3.2. HCF

9.3.2.1. Discussion

9.3.2.1.1. One issue is the fairness between multiple queues. Proposed an alternative solution.

9.3.2.2. Presentation of document 02/112r2a

9.3.2.3. Motion: To empower the editor to change all instances of xx[TC], including AIFS[TC], CWmin[TC], and CWmax[TC], to xxx[UP], after defining the acronym UP, which means User Priority, and to change working the make the revised draft consistent with the above changes.

9.3.2.3.1. Moved Sunghyun

9.3.2.3.2. Second Menzo

9.3.2.3.3. Discussion

9.3.2.3.3.1. Is the editor already empowered to make this change? Is it technical whether we call it TC or UP? We just want to make sure everyone understands. It does no harm.

9.3.2.3.4. Vote on the motion: Passes 34:0:3

9.3.2.4. Discussion

9.3.2.4.1. Which EDCF parameters to use. Problem with QSTA with less than 8 queues.

9.3.2.4.2. Proposed solution – use EDCF parameters of the frame at the head of the queue.

9.3.2.4.3. What parameter is best for post-backoff? Choose the frame that comes to the head of the queue, or if queue empty, the previously transmitted frame.

9.3.2.4.4. Normative text in 02/112r2.

9.3.2.5. Motion: to empower the editor to incorporate the normative changes found in the Word document 01/112r2, and to change wording to make the revised draft to be consistent with the above changes.

9.3.2.5.1. Moved Sunghyun.

9.3.2.5.2. Discussion

9.3.2.5.2.1. Recognizes the problem, but there is a simpler solution. Just use the parameters of the lowest priority mapped to the queue.

9.3.2.5.2.2. This is one way to fix this, that is another – most people thought this was the better idea. Does not accept the change.

9.3.2.5.3. Second – John K

9.3.2.5.4. Discussion

9.3.2.5.4.1. Against this, it introduces unnecessary complexity without justification.

9.3.2.5.4.2. This will introduce corner cases. What about a frame arriving in an empty queue with post backoff?

9.3.2.5.4.3. Does not see any positive behavior.

9.3.2.5.4.4. This allow you to trade off complexity for feature.

9.3.2.5.5. *Motion to amend: add "changing all occurrences of "latest frame in queue[l] if the queue is empty" to "the lowest priority assigned to queue[l] if the queue is empty".*

9.3.2.5.5.1. Moved Raju

9.3.2.5.5.2. Discussion

9.3.2.5.5.2.1. This solves the problem by using the lowest priority only if the queue is empty

9.3.2.5.5.3. Second Matthew

9.3.2.5.5.4. Discussion

9.3.2.5.5.4.1. This cannot be resolved tonight, we should move on.

9.3.2.5.5.4.2. Call the question (John / Adrian)
Passes 31:1:7

9.3.2.5.5.5. Vote on the motion to amend: Passes
10:6:24

9.3.2.6. *Motion on the floor: to empower the editor to incorporate the normative changes found in the Word document 01/112r2, and to change wording to make the revised draft to be consistent with the above changes and changing all occurrences of "latest frame in queue[l] if the queue is empty" to "the lowest priority assigned to queue[l] if the queue is empty"*

9.3.2.6.1. Call the question (John / Srinu) Passes 29:6:6

9.3.2.6.2. Clarification of the motion questions? None

9.3.2.6.3. When was this document on the server? 2:00PM today.

9.3.2.6.4. Vote: fails 25:10:5

9.3.3. FEC

9.3.3.1. Document 02/077r2, Ivan Oakes

9.3.3.1.1. ACK with FEC should be made optional. Indicated through station capabilities field.

9.3.3.1.2. Use Bit 10 and add appropriate text.

9.3.3.1.3. Only used if FEC is on.

9.3.3.2. *Motion: Instruct the editor to add normative text to section 7.1.3.4 as stated in 02/077r0 Change 1.*

9.3.3.2.1. Moved Ivan

9.3.3.2.2. Second Srinu

9.3.3.2.3. Discussion – none

9.3.3.2.4. Vote: Passes 27:1:5

9.3.3.3. Discussion

9.3.3.3.1. *Comment on section 7.5 – ad hoc group accepted this comment, resulting in this motion.*

9.3.3.3.2. *Was this editorial? This motion will include technical text in addition to bit position for FEC. Moved to frame control field.*

9.3.3.4. *Motion: To change the text according to the suggested resolution in Comment 23 by Michael Fischer “Move the function of the FEC bit, currently bit 9 of the QoS control field, to bit 15 of the Frame Control field, with the provision that FEC=1 is only permitted in QoS Data type Frames. Restore the description of the Order bit which used to be present from 802.11-1999, with the provision that order=1 is only permitted in on-QoS data type frames”.*

9.3.3.4.1. *Moved Ivan*

9.3.3.4.2. *Discussion*

9.3.3.4.2.1. *This was commented by Michael Fischer. Just use his comment.*

9.3.3.4.3. *Second John K*

9.3.3.4.4. *Motion to amend – delete the last 4 words.*

9.3.3.4.4.1. *Amended without objections*

9.3.3.4.5. *Motion passes without objection*

9.3.4. AP Mobility

9.3.4.1. *Document 02/066r2, Adrian Stephens*

9.3.4.2. *Motion: Instruct the editor to amend the TGe draft as specified in 02/066r3*

9.3.4.2.1. *Moved Adrian*

9.3.4.2.2. *Second John K*

9.3.4.2.3. *Discussion*

9.3.4.2.3.1. *None*

9.3.4.2.4. *Motion passes with unanimous consent.*

9.3.5. FEC

9.3.5.1. *Document 02/115r0 “Updated FEC”.*

9.3.5.2. *Motion: to instruct the editor to adopt the text in 11-02-115r0 into the draft, which contains the updated text for section 7.5*

9.3.5.2.1. *Moved Ivan*

9.3.5.2.2. *Srini*

9.3.5.2.3. *Passed by unanimous consent*

9.4. New Business

9.4.1. Strategy

9.4.1.1. *The chair would like to continue the ad-hoc groups between now and the next meeting, with the same leaders.*

- 9.4.1.2. *The leaders of these groups are responsible to bring recommendations to address the comments.*
- 9.4.1.3. *Need to assign fixed times for teleconferences.*
- 9.4.1.4. *Three teleconferences in the 3 weeks preceding the next meeting, with 3 topics per teleconference.*

9.4.2. Discussion

- 9.4.2.1. *2000 comments is still a lot. To get that much done, each group should have a teleconference each week. Three teleconferences are not enough.*
- 9.4.2.2. *The logistics are difficult – people don't have that much time.*
- 9.4.2.3. *This assumes the leads will have that much time available – some may not.*
 - 9.4.2.3.1. *Srini will take over Burst Ack from Maarten.*
 - 9.4.2.3.2. *Sunghyun will take leadership for the FEC group.*
 - 9.4.2.3.3. *Khaled – looking to hand off leadership of MAC Frames*
- 9.4.2.4. *Supports the weekly conference. Small groups can create resolutions that are accepted by the rest of the group.*
- 9.4.2.5. *Any objection to maintain the Ad Hoc groups? None*
- 9.4.2.6. *There are some other areas we have not touched yet?*
 - 9.4.2.6.1. *For example OBSS.*
- 9.4.2.7. *We need to group the comments and find out what needs to be addressed.*
- 9.4.2.8. *New Ad Hoc groups should be suggested on the reflector, but the decision is by the TG Chair.*
- 9.4.2.9. *How do we address comments that don't fit in?*
- 9.4.2.10. *Matthew Sherman will lead the OBSS group.*
- 9.4.2.11. *Did we create an "all other comments" group?*
- 9.4.2.12. *The leaders of each group should coordinate among themselves to sort the comments.*
- 9.4.2.13. *We need to generate normative text based on the comments and their resolutions.*
- 9.4.2.14. *A proposed resolution for each comment.*
- 9.4.2.15. *Communications should be on the reflector.*

9.4.3. Assignment of Ad Hoc leaders

- 9.4.3.1. *Burst Acks – Srini*
- 9.4.3.2. *HCF – Jin Meng*
- 9.4.3.3. *AP Mobility – Adrian*
- 9.4.3.4. *MAC frames – Matthew & Khaled*
- 9.4.3.5. *FEC – Sunghyun*
- 9.4.3.6. *OBSS – Matthew (after MAC Frames)*
- 9.4.3.7. *Everything Else – Keith A*

9.4.4. Teleconferences

9.4.4.1. *Weekly, Starting in two weeks: Week of Feb 4th*

9.4.4.1.1. *Monday: Burst Ack*

9.4.4.1.2. *Monday: FEC*

9.4.4.1.3. *Tuesday: HCF Rules*

9.4.4.1.4. *Wednesday: AP Mobility*

9.4.4.1.5. *Wednesday: Everything Else:*

9.4.4.1.6. *Thursday: MAC Frames*

9.4.4.1.7. *Thursday: OBSS*

9.4.4.2. *Groups determine the time – the leaders of the groups on the same day should coordinate to prevent overlap.*

9.4.4.3. *We need to announce the teleconferences and the times on the reflector. Announce them all by next week.*

9.4.4.4. *Who sets up the bridge? John F will coordinate.*

9.4.4.5. *Need to present counts of comments resolved and rejected?*

9.4.4.5.1. *No, the chair says we need to build consensus. No voters will accept a reasonable alternative. We cannot accept all comments.*

9.4.5. Operating Rules

9.4.5.1. *Proposed change to 802.11 operating rules. New section 2.8.2 section C.*

9.4.5.2. *Discussion*

9.4.5.2.1. *Modified text provides improved process to allow letter ballots to be edited by the editor after the close of a session, with an option for a confirmation email ballot.*

9.4.5.2.2. *This provides a third option for the case where changes could not be incorporated during a meeting session.*

9.4.5.2.3. *Is there a conflict with clause B? No.*

9.4.5.3. *The TG chair supports this proposed change.*

9.4.5.4. *The WG chair points out that this is a change to the operating rules itself. This means we have to provide this to the membership the session before. One viewpoint is that it has to be presented to all of 802. Another consideration is that the voting list cannot be updated in 10 days.*

9.4.5.5. *If we vote on it, it is incorporated into the rules in the March meeting, and not in effect until May.*

9.4.5.6. *Is there any objection to this text? None. It will be presented on behalf of the group.*

9.4.5.7. *The WG chair notes that a precedent has been set in 802.1. There will be further research.*

9.5. Adjourn at 9:47PM

**IEEE P802.11
Wireless LANs**

TGf Minutes for the January 2002 Session

Date: January 25, 2002

Author: Jon Rosdahl

Micro Linear

Salt Lake Design Center

Phone: 801-617-2508

Fax: 801-617-2501

e-Mail: jrosdahl@ieee.org

Abstract

Minutes of the 802.11f meetings in Dallas Texas January 21-25, 2002.

Monday January 21, 2002 TGf Mtg:

10:50 call to order

Jon Rosdahl was asked to act as secretary for the week.

Motion to approve minutes from Nov.

Moved: Bob O., 2nd Jon R.

Vote: 4,0,0

Review Goals.

Agenda for Jan. 2002.

Review an E-mail that was sent out that failed to get delivered.

It explains the state of TGf and what we hope to achieve this week.

Reviewed proposed agenda

Call for new items of business,

Jon Rosdahl asked for Secretary position be formalized retro to Nov 2001.

Robert Moskowitz. informed us that while he had a new proposal, but had lost it due to hardware failure. He will try to get the proposal rewritten, and would like time on agenda.

For the TGf joint meeting, they are looking at talking to TGf about what we are doing. Some in the group believe that the TGf is looking at how TGf is managing the security between APs, Robert told the TGf group that if they wanted to do security in TGf then they would need to attend the f mtg

Motion: Moved to adopt agenda as proposed

Moved: Richard Paine

Second: Leo Monteban

Vote:4,0,0

Jon volunteers to be committed to be Sec permanently.

Move to elect Jon Rosdahl as TGf Secretary.

Moved: Richard P.

2nd: Leo Monteban

vote: 4,0,0

The document "LB29 Editorial Comments to process in Jan 2002" was displayed for discussion.

Comments in Red were comments that were not accepted without question. Editor has noted that the requested change was not made, and that the TG should look at these comments further. These disposition are suggested. (usually to make no change.)

Yellow and empty were comments that the editor was not able to change prior to this meeting.

Moved: Motion to approve Editor's editorial changes incorporated in proposed draft 2.2

Moved: Richard P

2nd: Jon

Vote: 3,0,1

Comment Number

18: This was resolved by the inclusion of TCP for the timeout and retry behavior for the protocol.

474 & 707: We did TGf portion in Nov.: decided to secure TFG Msgs. Rest of comment is declined as this maybe an TGf issue.

271: declined comment, as no chart was created. Vote: unam.

This was all the Technical comments that the Editor worked on since the Nov. Mtg.

Motion: adopt 2.2 as TGf draft as draft 2.2

Moved: Richard P. 2nd Monteban

Vote: unam

Recessed for Lunch 11:50am

Monday, Jan 21 Afternoon Session:

Called to order 1:08pm

Roll was passed :

Dave Bagby, Bob O'Hara, Jon Rosdahl, Sherry Johnson, JawYih (joe) Wang, Richard H. Paine, Shyhtsun Feliz Wu, Bala Balachander, Sandeep Singhal, Jagannatha Venkatesh L., Leo Monteban, Spencer Stephens, Robert Moskowitz.

Return to the point we left off at in processing last Nov.

Line 666 was the last one completed in the minutes.

The next one to processes is line 672. the others were completed in earlier dispostion processing.

Line 672 comment #610: decline, The field is there to keep word alignment.

Line 673 comment #688: resolved by selecting TCP for transport.

Line 674, comment #65: add to security group of comments.

Line 676, comment #47: declined preserved for larger MAC addresses.

Discussion of how much value is there in having the flexibility in listing the size of the MAC addresses.

Line 677, comment #215: accepted.

Line 678, comment #263:

Line 679, comment #508:

Line 681,

Line 682,

The paragraph needed to have a sentence to indicate where the sequence number is used.

Line 680, Comment #518: declined by decisions from Nov.

Line 686, Comment #611: comment moot, field is no longer reserved. Declined.

Line 684, Comment #689: resolved by adoption of TCP for MSG (Nov. Decision), See revised draft for next round.

Line 685, Comment #: accepted.

Line 686, Comment #337: declined, section referenced doesn't exist.

Line 687, Comment #138: This possibility doesn't exist, see comment #8.

Discussion on looking for what the resolution was for similar comment.

Line 688, Comment #139: Issue resolved in proposed draft 2.2

Line 689, Comment #143: references are correct, but the spelling is incorrect. This has been corrected in proposed draft 2.3. Accepted.

Line 690, Comment #141: The request is what may timeout, which generates the confirm. The comment is declined.

Line 691, Comment #142: See clause 6.4 – Case sensitivity issue. Corrected.

Linen 692, Comment # :See Line 690 for resolution.

Line 693, Comment #468: Declined: Can't say "shall" in a recommended practice. The draft follows IEEE language guidelines.

Line 694, Comment #469: Declined, World Hunger is not part of our PAR. A PAR has been defined with a prescribed scope.

Line 695, Comment #544: Declined. The subject commented on is not recognized by the TGf group – a submission to elaborate would be required before the TGf could consider the topic further.

Line 696, Comment #619: resolved by motion in Nov. 2001 Mtg.

Line 697, Comment #17: resolved, it was added as part of 2.2 from Nov. Decision.

Review the file that was submitted for changes to MIB.

Line 698, Comment #449: resolved in v2.2.

Line 699, Comment #19

Line 700, Comment #20: corrected wording in v2.3.

Line 701, Comment #22: accepted, but the referred file cannot be found.

Line 702, Comment #23: Accepted.

Line 703, Comment #264

Line 704, Comment #509

Line 705, Comment #604: The format and context of the context block is to be defined by the 802.11 standards that will use this. As this is not adopted yet, there is not acceptable response. no published doc can be referenced as they will not exist until after TGf is done. The real question is who defines context Block Contents. That is the 802.11 MAC specs as updated by TGe and/or TGi and/or future MAC revisions.

Line 706, Comment # 50

Line 708, Comment #421:

Action Item: Robert M. to look for the actual value.

Line 707, Comment #52: Accepted, section removed.

Line 710, Comment #25: State machines are not required for the publication of an Recommended Practice. If a state machine submission was received, it would be considered – the commenter is invited to submit such a paper.

Discussion of what one value of having a state machine would be.

Line 711, Comment 53: TGf is not handling QOS or other specific requirements from TGe or TGi, instead a general mechanism for state xfer between APs has been defined. It is believed that this is sufficient for QOS to the extent that it has been defined and published by TGe as the LB. Also no recommended change is requested and so comment is accepted, the change requested is accepted.

Line 712, Comment 131: Accepted, TCP has been specified for certain transactions, and it is believed that SLP is a suitable discovery protocol.

Line 713, Comment 332: declined, See decisions in Nov regarding Sequence numbers. See Nov. Minutes.

Line 714, Comment 410:

Line 715, Comment 411: Comment: for the case cited, TCP has replaced UDP resolving the issue.

Line 716, Comment 412: comment not understood, no change requested and none made.

TGf Recessed 2:58 pm

Tuesday Morning Jan 22,2002

After spending 40 minutes getting moved back and forth from one room back to the originally planned room, the meeting started at 7:40

Line 717, Comment #422: The MIB entries recommended by TGf are intended to be a portion of an AP implementation, and would be read by whatever mechanisms are in the AP to access it's MIB.

Line 718, Comment 471

Line 723 Comment 704: TGi is not chartered to solve all 802.11 security issues, only 802.11 MAC security issues, Therefore referring the work requested to TGi is inappropriate. Regarding the referred issues, the TGf group is working those that it believes are required, if more is needed, the commenter is requested to explain that to TGf in detail via a submission.

Line 719, Comment 536: The comment is declined. The group Long ago decided that it was not going to specify IAPP for Layer 2 (no interest was expressed in the L2 Approach), Hence the spec of use of 802.3 and bridges was declined.

Line 720, Comment546: The scope clause in the draft goes beyond the scope allowed by the TGf PAR. The scope in the draft will be corrected to match that of the PAR. The Draft contents already reflect the more limited scope of the PAR.

Line 721, Comment 699: declined, removing the context mechanism would be in conflict with several other comments which requested it. The comment is declined.

Line 722, Comment 700: Declined, Please see mtg minutes from Nov. 2001.

Line 724, Comment 711: Comment does not point out any problem and asks for no changes, so no changes were made as a result of the comment.

Line 725 Comment #256

Line 726 Comment #501

Line 727 Comment #596: The IAPP does not deal with the delivery of wireless client MSDUs, only the communications between APs that enable this delivery.

Line 728 Comment 78: declined, see disposition of comment # 71.

Line 729 Comment 349: this comment is editorial, not technical. It is declined to change the document title which is specified in the PAR.

Line 730 Comment #524: The text referenced was deleted in response to other comments so this comment is moot. Please see revised TGf draft2.2 or later.

Line 731 Comment #532: The group decided that the IAPP refresh was no longer necessary. The SLP service will take care of the IAPP refresh, so the MIB entry to drive this was deleted. Comment Accepted.

Discussion on this comment, the origination for the MIB value was prior to the advent of the use of SLP, but there is not a concensus of the need for this value at this time. Introducing the value in the MIB is not appropriate. The room was polled to ensure agreement and alive.

Line 732 Comment #89:

After doing a search for the location of the comment, as the comment location was missing, the comment was accepted. It was in section 1.3.

Dave's PowerPoint just notified the group of an error, and there is a need to restart the powerpoint, but we decided to not restart the meeting. ☺

All the Comments have been reviewed at least once, and most have been resolved.

Comments 706, 708, 709 were assigned to Robert, He had John Vollbrecht look at number 706 & 708.

For 706, and 708 we can create our own numbering assignment for the AAA. So for our assignment, we would start with 1 for RADIUS, and as each new protocol was supported, a new number would be added.

Line 706 Comment 50

Line 708 Comment 421: TBD has been corrected.

Bob needs a doodling moment while Jon gets the comment number for 706 and 708....50 and 421.

Dave informed the group that immediately after the break, we will be creating the text to resolve the outstanding issues. Robert has a presentation to present after the break, although the detail of the protocol between IAPP and the registration is not completed. He does have a doc number to place on the Server.

Venus is currently unavailable. Dave to check on the Venus Server during the break.

Line 709 Comment 24: The Recommended Practice does not "add an APME". It calls an entity in an AP by the name of APME. This entity is typically the operationing program of the AP and includes the control functions of the AP. The interface to this entity by the IAPP protocol is defined in the TGf document.

Discusion , Dave projected the draft on the screen to show where the APME was described, The APME is an external function..... So line 709 was approved to resolve with the comment listed.

The question of what is the logistics of the long term for this group...

We have to get a WG ballot, and a recirculation ballot, then a Sponsor Ballot, and we end at the end of the Year.

Attendees for this morning: Jon Rosdahl, Spencer Stephens, John Vollbrecht, Sherry Johnson, Bob Moskowitz, Richard Paine, Joe Wang, Fanny Milinarsky, David Lucia, Bob Ohara, Dave Bagby.

Break time!!! ☺ recess at 8:55. Will start with Robert's paper when we reconvene.

Mtg Resumed: 10:35 AM.

Paper from Robert Moskowitz, Doc Number originally 01-564r0-f, but will get a new number later today.

Proposal for a method to construct and operata a Secure Ess.

Roll of Registry

- Maintain record of all APs

- Manage Security relations

- Registry Configured

- Registry Provisions of the AP

AP Installation

- Information needed by AP

- Information Sources

- Machine, DHCP, Registry, Direct Input

AP Registration – Boot process

- Creating Entry

- IP address is potential different on each boot of the AP, so we provide for that.

- AP Name and Registry Token

- Registry pushes to the AP the IAPP security suite info

Station Roam Operations

- Station gives AP old BSSID

- AP sends IAPP to old AP in ESP and SA (within IPsec Terms)

- Note, that the use of IPsec is not as limiting as some may think, this proposal handles the issue of scaling specifrcally

- If AP queries Registry of BSSID and gets info.....

- AP sends IAPP traffic to old AP

- If we tell the Registry that the AP has gone, then we need to suggest the appropriate action for the registry to do.

If old AP has knowledge of new AP, then AP gets either good or bad response from Registry
 Note: Different IAPP ESP keys and SPIs are used for each direction (Typical IPsec operation.)

State Maintenance

Registry Maintains state with All APs across Boots
 If AP Reboots, it creates new state with the Registry

This caused a discussion to ensue, The agreement was that once the Registry goes down, is this an event that requires a complete restating of the registry or can we keep the session information across the boot of the registry. In the case of a roam to an AP that is not authenticated with the Registry, then the Registry forces the authentication of the new AP. This is the same case as if the registry has had to reset at reboot. Bob will change the longevity of the Registry data to reset at the rebooting/resetting of the Registry.

The AP needs to rekey with the Registry, creating a new session key at period N or almost 2^{32} ESP frames from any AP to registry.

AP State Caching

APs only need to have knowledge of "near-by" APs (meaning that a STA roamed to me from the old AP)
 APs can age cached information

Discussion of Roaming and what credentials are needed for what, and do we allow different mechanisms?

.....

How do we allow for upgrading the security support and the policies for the APs that are old?

The registry manages the cipher-suite for pairing the APs to supported levels of support. The manager may set the security policy to minimum of security allowed.

In practice, the VPN security dials are either on very hard or on very light.

Discussion of what do we need to put into the Recommended Practice. Do we tell other sub groups how to access the registry, and do we want to get into the business of defining this level. Adding text to Annex B we can tell others what "Could" be in the registry. The TGi and TGe are wanting to have the information defined for them, and then they want to make the change to what they want that they have not defined yet.

Registry Data Structures

Permanent AP Info
 AP Name (BSSID)
 IAPP Session Info
 Other AP Name
 Date./Time setup
 SA – SPI, Key, Sent to AP (Boolean)

General Conclusions:

A Wireless Phone Model works for setting up Registry and APs
 Registry is critical to creating the ESS
 APs initiate most communication with the Registry
 Complexity of Registry Tracking AP-AP removes greater complexity of APs learning about rekeying
 Need to define Registry/AP communication protocol

We will try to restart at 1pm sharp. And we need to determine whether this is the way we would like to proceed with this security exchange mechanism

Recess for lunch 11:59 am

Tuesday Jan 22, TGf, Afternoon,

Mtg Resumes 1:04 pm

Attendance: Dave Bagby, Bob O'Hara, Jon Rosdahl, Robert Moskowitz, John Vollbrecht, Jaw-Yih (Joe) Wang, Spencer Stephens, Naotaka Maruyama, Toshikuni Osogoe, Shyhtsun Felix Wu, Joe Sensendort, Robert Kanark, Brian Agee, Sherry Johnson, Mike Moreton, Jagannatha Venkatesha. L.

We need to identify the topics for the text that needs to be written to resolve the final issues.

Sequence number – Yellow colored blocks

Context Block – Tan

Editor yet to complete – Pink

Security – Blue

Lines to go back to: 616,

Review of ToDo List from Nov:

Add text to implement secure AP to AP stuff (Robert M's)

Context Block – Leave as is, (Size Limit)

Add text to desc seq # usage

Resolve: 616 – which is open. RE SLP.

Reviewed comments from Nov for Sequence numbers

Question if we remove SLP and replace it with COPS, then do we remove one less known protocol for one that is even more unknown? If RADIUS would be sufficient, then we may have a more welcome reception to the proposal.

In order to use RADIUS, the AP would need to be a RADIUS client with a secret.

Discussion of RADIUS plus's and minus'.

Returning to Bob M. 's presentation, looking at exactly what would we be storing for TGe and TGf? Bob M. States that only Homogeneity for the devices provides that both AP's would be able to translate the blob.

Somehow we need to allow a station to roam such that it didn't need to re-authenticate every time.

IF north half of a building is using Security A, and if the South side is using B, the I can roam without any problem in the north or the south, but I may have to re-authentic and change the security method I am using to move from North to south or visa-versa.

We are concerned with the storage of variables for other sub-groups in a Recommended practice.

Proposed work plan....

Generate draft 2.3

2.2+ that bob has as of Tu at 13:30

Add Context Block Text

Add Seq # Discussion

Done by 4 pm Tuesday

In Parallel

In Sec Gang investigates the following:

RM Proposal (Minimum)

W/o push

Able to do via RADIUS

W/O e/i registry storage issue

Report back at 4 pm

If Security Group says Thumbs up...

Take 2.3, Add sec Text, create 2.4, review, adopt as TG Draft.

No objection to following the proposed plan.

The security group left the room:

The remaining folks looked at the the context block issue, the only open issue was the size limit, but as the group unanimously left the size there.

Taking the results from the Nov. Minutes, Bob will take that text and merge it with what we have done so far this week, and then get the new draft for us to look at as soon as possible.

Recess mtg 2:03 – will return at 3:30pm

Tuesday Late Afternoon: Reconvened 4:00pm

Reviewed AD-Hoc group notes, and agreed to proceed with Robert's documented proposal 01-564r0-f.

The group determined that the text proposed needed to be added.

Recessed to allow editors to work on doc.

Recess 5:15

Wednesday Morning Convened: 9:05pm

Report from Bob on editing

Have added the text as instructed, there are some details of the Security details that need to be completed, and some general cleanup toward the SLP to RADIUS replacement. Question on whether there is a copy that all could look at. Copy of work in progress would be made to the group for a preview.

Rob M. concern with creating protection for the add message.

How important is it to do that message. After you get an Associate you are supposed to do an ADD, the reason is to account for STA that fail to do the Re-Associate correctly, or if it is the first associate. The ADD Message then allows any old APs get the info needed to clean-up. The L2 packet is to allow bridges to update their routing tables. These 802.2 frames are XID frames that are used to allow the hardware to update to the location of the roaming STA.

If we send the ADD message to the Global broadcast address, then If broadcast/multicast packet routing is on, the a better chance to contact all the APs in the ESS.

It is complex to protect ADD message with RADIUS, is it really important to have this message secure?

If we have to secure it, then to change the key, you have to restart the ESS each time.

Would our group make better progress to just leave it open, and go to letter ballot and address it only if necessary.

Robert said that because we can't prevent the replay attack.

Don't proceed with protecting the broadcast messages for now, and let's make progress for what we can.

Leaving the group some time to work on the text, the time to have the full group to come back.

A copy of the preview was made available on both Venus and Venus2 in the TGf Temp areas.

The chair is planning on telling the plenary that we will have a draft for letter ballot out of this week's mtg. Security tesxt group is flying out on Thursday.

Review of the schedule, plan for completing on Thursday Morning.

Robert is appointed as keeper of projector. Editors will be working close to this general area.

Those attending this morning was Dave Bagby, Jon Rosdahl, Bob O'Hara, Robert Moskowitz, Sandeep Singhal, Mark Klerger, Justin McCann, John Vollbrecht, Spencer Stephens, Sherry Johnson, Jagannatha Venkatesha, Mike Moreton, Shyhtsun Felix Wu, Kit Youg.

Recess to 3:30 pm at 9:30.

Wednesday Afternoon Meeting Resumed: 3:40pm

Attendance was taken: Dave Bagby, Bob O'Hara, Jon Rosdahl, Bernard Aboba, David B. Nelson, Justin McCann, Sandeep Singhal, Robert Moskowitz, John Vollbrecht, Bala Balachander, Jagannatha Venkatesha, Sherry Johnson, and Spencer Stephens.

The proposed draft was projected and the group started to walk through concerns that were identified, and the machine crashed.

From Wednesday AM, we had good progress. We Need to get IEEE vendor ID so can get UIDs assigned. We need to indentify if we need new numbers or just use .5 numbers.

Bob reported that all the editorials that the editor choose to do are complete.

Another pass through the comment file to ensure that we didn't miss any comments was made.

The following comments are addressed in the Security edits:

Lines 368, 369, 531, 541, 542, 616, 635, 636, 637, 638, 639, 640, 641, 642, 643, 674

Comments resolved please see new version.

Revision 8 of the comments resolution file is the completed resolution file.

We have now completed the letter ballot processing file.

01-522 is the document number.

We have a little text to write in 5.4. We need to allow each to look it over.

We will ask TGF to officially adopt the draft on Thursday AM, and then posted on Venus prior to the Joint TGi mtg.

Is the MOVE.Request location in 5.4 or in some other section.

Comment that we may need to add a primitive to allow the Access Point to get the Security Context from the RADIUS server. Need something in Section 4 that addresses how to get the Security???? No, it is not needed there, but it is in the section 5.4.

Request for an overview, but it was pointed out that Clause 1 is just that.

Looked at the location of the diagram, and the contents of 5.4.

Jessie entered the room, and the meeting separated into small groups for a moment.

Back to the center of the mtg.

The current editing is being done on the screen.

The 5.4 discussion continues....

This is only for the MOVE operation.

There are RADIUS operation section and Authenticaiton section, and then 5.4 Tells of Secure Operation of IAPP, but if we remove 5.3 and have 5.4 be an IAPP interaction section.

5.4 is AP to AP, and then under 5.4, you have the description of MOVE and ADD and then point out what is open and what is secure.

Looking for help in getting the text for the section. Use John V.'s picture just in front of 5.1.

Justin McCann will help with one of the paragraph's.

The picture was there.

Robert M will do the 5.4.1 Move, and how to process the BSSID security Blob.....

The format of the blob has been given.

Question why do the ADD, if it is not secure? Because the ADD.Notify is necessated, but as there isn't a lot of text needed for section 5.4.2 ADD.

Separate for editing again. Each to review the doc preview.

Text for integration will happen later tonight, but it is not a huge change from 2.3b. a 2.3c will be available in the morning, and if we can get some agreement, then we will look to adopt in the morning.

We will start at 8 am in the morning as we only have 2 hours then. All Text generating needs to be done tonight.

An ad-hoc group will meet at Robert M's room for some final editing. (some one is to bring the Beer).

Meeting officially recessed: 5:30

Thursday, Jan 24th, Morning Mtg

Convene at 7:05

Attendance for This morning: Dave Bagby, Bob O'Hara, Jon Rosdahl, Robert Moskowitz, John Vollbrecht, Justin McCann, Sandeep Singhal, Spencer Stephens, John Balian, Mark Kleker, Bala Balachander, Jagannatha Venkatesha, Sherry Johnson.

NEWS items from Chairs mtg for Closing Plenary:

TGi is planning on Letter Ballot, but TGe is also planning on Letter Ballot, but because they are not responding to the comments, and that Letter Ballot is supposed to be Technecally complete prior to sending to Letter Ballot. TGe says that the SDL work is awaiting for features to stabalize. If TGe is not allowed to go, then how can TGi go to letter ballot if they don't have it done also. The plenary is going to ask for membership votes to send things to Letter Ballot. Each member should watch the server for proposed drafts to be able to make informed decisions.

Currently in Information Element is 2 bytes, but if you extend it to 4 bytes....as we are not in the business to transfer propriety context.

There is a new revision on Venus2. for review.

The final version will need to be posted by 9:30 to make the 4 hour rule.

Inorder to give some more discussion time, we need it sooner. We had planned on voting on this this morning, but we need to work on the getting the 3.0 ready now.

Robert has some items that may be used as his response to the letter ballot. The question is do you have to have this? One of the items is in response to a possible attack. There are 3 security blocks, there is lack of clarity on use of RADIUS password usage, 2 are not authenticated. Dave instructed Robert to craft the text for consideration.

Review of the Schedule for the remaining hours of today was done.

Group worked in small groups to review the posted preview version and prepare the final textual corrections.

After the group worked out the final details, Bob edited the doc while projecting the text for all to observe, and then at 9:39 AM, the version of the draft was placed on Venus 2, and a call made to Harry W. to place it officially on IEEE server, a message was left. The version placed out was 2.4 which has the change bars from 2.0, and version 3.0 if accepted will get posted.

Version 3.0 was posted to the To_Doc_Keeper at 9:49, and another call to Harry W. was placed. This time Harry was able to answer. He is in the process of moving it to Venus.

A call from Harry was received at 9:54am telling us it was posted.

MOTION: To adopt 802.11f-D2.4 (Change bars relative to v2.0) and 802.11f-D3 (with all 2.4 change bars accepted).

Moved: Robert M. 2nd:Bob O.

Discussion:

Motion: Moved to postpone to Thursday 1/24 at 14:00 CST (to satisfy doc posting time rules).

Moved: Jon R. 2Nd : Robert M.

Vote: Unam.

Call from Harry to tell us that the image is now on both Venus and Venus2.

Request to ask that all return for the vote at 2pm

THANKS to All for help

Recess until the Joint TGi/TGf mtg at 10:30, we will reconvene at 1 in this room later.

Recesses at 9:59am

Thursday, 24 January 2002, 10:34am Joint Mtg with TGi:

Joint Mtg with TGi has official minutes being taken by TGi Secretary Frank Ciotti.

Thursday, 24 January 2002, Afternoon Session:

Meeting called to order 1:12pm.

Attendance Credit is to be given to the following people for their efforts in the 2 late night evening sessions: Bob O'Hara, John Volbrecht, Robert Moskowitz, and Justin McCann.

Attendance to this mtg: Dave Bagby, Bob O'Hara, Jon Rosdahl, Sandeep Singhal, Joe (Jaw-Yih) Wang, Osogoe, Toshikani, Jim Hobza, Shyhtsun Felix Wu, David Kline, Bob O'Hara

Review proposed TGf Chair Report to Plenary

Motion to Recess until 1:50 passed unam.

Mtg Called to order at 1:57

Attendance was verified to be the same folks as listed earlier plus Ho-In Jeon.

We waited until the 2:00pm to vote on the following Motion.

Motion

Move to adopt 802.11f-D2.4 (change bars relative to D2.0) and 802.11f-D3 (all 2.4 changes accepted)

Vote: unam.

Motion:

Whereas Draft 3.0 contains the adopted resolutions to all comments received from LB 29 (as published in 01/522R8);

TGf moves to conduct a working group letter ballot to forward the 802.11f-D3 to sponsor ballot. Ballot is requested to complete before start of March 2002.

Moved: Bob O'Hara, 2nd Jon Rosdahl,

Vote: Unam

Shyhtsun, would like to have discussed the proposal in detail with Robert M. He also had a question on the lifetime of this Recommended Practice.

No other business or announcements.

Meeting adjourned 2:07pm

**IEEE P802.11
Wireless LANs**

IEEE 802.11 Task Group G Minutes for January 2002 Session

Date: January 2002

Author: Matthew B. Shoemake
IEEE 802.11g Chairperson
m.b.shoemake@ieee.org

**Monday January 21, 2002, 10:30 AM
802.11g Meeting**

Document 2 in 2002

- Call to order
- Chair status update
- Review of policies and rules
- And review agenda for this week
- Document 46 with Chairs Update
- Brief discussion of the Chairs update by Mat
 - November 2001 session review
 - Draft 1.1 posted to 802.11 website in January of this year.
- Objectives
 - General submissions
 - Presentations relating to the draft standard
 - Motions related to the draft
 - Coordinate with Radio Regulatory with Vic Hayes
 - Motion to issue first 802.11g letter ballot
- Strategy for this meeting
 - Monday
 - Set agenda
 - Presentations of Submissions
 - Tuesday
 - Presentations
 - Motions
 - Wednesday
 - Update draft of version 2.0 changes
 - Thursday
 - Review draft 2.0 changes
 - Motion to request WG letter ballot #31 be issued on topic of IEEE 9802.11g draft 2.0
 - New business
 - Joint meeting with Radio regulatory committee
 - Friday
 - Take motion to the WG for the issuance of a letter ballot
- Announcements
 - No logos or copyrighted
 - Cell phones, turn them off!
 - Use MS Word and PPT for submissions
 - Obtain doc numbers from Harry.
 - Wireless LAN access

- Decorum in the Meeting
- Approve or modify the agenda
 - Using the document posted on the network.
- Review and approve Minutes
 - Portland
 - Austin
- Call for Submissions
- Presentation of General Submissions

- Motion to adopt the agenda that is presented by Mat.
 - Motion to adopt by Bill Carney, to document 11-02-002r2-G
 - Bruce Cramer seconds.
 - Discussion of the Motion
 - Bill Carney Comments: How many people would like to have dinner for more than one hour.
 - Quick straw poll having an hour and a half and considered the following:
 - Interested in doing this every night this week?
 - Stop meeting at 5:00?
 - Coming back to the meeting at 7:00
 - Any objections to change the starting time? None
 - Unanimous consent, Mat will approve doc 11-02-002r3-G with modification to show evening start time at 7:00 PM.
 - By voting members only, votes in favor of the motion?
 - For / against / abstain → 42/0/0, Motion passes.
- Approval 347r1 motion
- Acceptance of Portland Minutes
 - Bruce Kramer, motion to accept
 - Srikanth Gummadi seconds the motion
 - Comments, No
 - Objections, no
 - Minutes accepted 01347r1
- Acceptance of the Austin November 2001 Meeting Minutes
 - Minutes document #0157602
 - Bruce Kramer to
 - Srikanth Gummadi seconds
 - Comments, no
 - Objections, No
 - Minutes are accepted by unanimous consent
- Call for Submissions, responses were:
 - Rishi 11-02-043r0-G
 - Rishi 11-02-044r0-G
 - Jung Yee, no document number yet
 - Ron Brockmann 802.11g MAC Analysis, no document number yet
 - Steve Halford, Spectral Control issues, no document number
 - Choi, pending, 2 submissions, 11-02-051r0-G, 11-02-052r0-G
 - Chris Hanson 802.11b Backward Compatibility Issues
- All presenters will make a motion with their submission...
- So, who wants to go first?
- Submission Presentation
 - PRESENTATION: Jung Yee, IceFyre Semiconductor, asks to present first.
 - 802.11g PAR Issues with Draft 1.1, 11-02-064r0-G
 - Questions and discussion followed the presentation.
- Motion to adjourn for lunch

**Monday January 21, 2002, 1:00 PM
802.11g Meeting**

- Call to Order after lunch break.
- Submission Presentations continued:
 - PRESENTATION: Rishi Mohindra, Maxim, 11-02-043r0-G, Adjacent Channel QPSK interference on OFDM
 - Questions and discussion followed the presentation.
 - PRESENTATION: Rishi Mohindra, Maxim, 11-02-044r0-G, Adjacent Channel QPSK interference on QPSK
 - A single question followed this presentation.
 - PRESENTATION: Ron Brockmann, Intersil, 11-02-xxxxr0, 802.11g MAC Analysis
 - Discussion and questions on the presentation followed.
 - Straw poll called for by Mat for RTS-CTS issue for a clause that recommends about ways to us RTS-CTS?
 - Do we want to address this?
 - Vote by hand clearly shows the vast majority indicated that something should go into the draft.
 - Recommended use to the implementers?
 - 44 voted for some kind of recommendation.
 - 18 voted for a need for explicit requirement.
 - A vote on CWmin being 15 versus 31?
 - Comments on this straw poll.
 - 2 comments in favor of reducing CWmin to 15.
 - 1 comment against the change in CWmin to 15.
 - In favor for CWmin of 15 = 40
 - In favor of CWmin of 31 = 1
 - PRESENTATION: Sunghyun Choi, Philips, 11-02-051r0-G, New OFDM Service Field Format for 802.11e MAC FEC
 - Questions and comments followed the presentation.
 - Sunghyun would like to do a straw poll on the solution presented.
 - Attendees who like solution?
 - 4 votes counted
 - Attendees who don't like the solution at and believe that we should not do any work in this area?
 - 12 votes counted
 - Comments were solicited by Sunghyun on this vote.
 - Comments offered by several meeting participants on this vote.
 - Attendees who don't particularly like the solution offered, but believe that there should be something else we should be doing in this area?
 - 16 votes counted
 - WITHDRAWN → Chris Hansen, 802.11b Backward Compatibility Issues
 - WITHDRAWN → Steve Halford, Intersil, Spectral Control Issues
 - PRESENTATION: Mark Webster, Intersil, 11-02-0xxrx, Proposed Change to CCK-OFDM Signal Extension
 - Will make motion with submission.
 - A question followed the presentation.
 - Will be taken up on Tuesday morning.
 - TBD by Sunghyun Choi to be presented on Tuesday.

- Chair discusses the following points:
 - Motions to be prepared for Tuesday afternoon meeting by the presenters.
 - Are there any other issues that would prevent the WG to move to a consent to a letter ballot on Tuesday.
 - Chair hears that there are no problems expected.
- Chair calls for recess with no meeting this evening.

Tuesday January 22, 2002, 1:00 PM
802.11g Meeting

- Call meeting to order at 6:55 PM
- Announcement from Harry, document keeper concerning two issues that have come to light:
 - Corrected document for document template. The mistake has been corrected.
 - The “\venus” server is coming down shortly for maintenance.
 - The Chair clarified the document template problem for the attendees.
- Chair to move forward with new submissions and revised documents
 - Rishi has yet to get a document number
 - Document 65 updated to r1
 - PRESENTATION: Sunghyun Choi, Philips Research, 11-02-052r0-G, “.11g and .11b Collision Avoidance”
 - Questions and comments followed the presentation.
 - Concern on the document number being duplicated existing in the network.
 - Chair is offering the use of a straw poll to determine how to use this proposal.
 - Whether membership believes that this fits better in TGe?
 - 65 votes
 - Whether it fits better in TGg?
 - 1 vote
 - Whether the members believe see this pursued further?
 - In favor: 46 votes
 - No further pursuit: 0
- Update on document numbers by the Chair.
- Updates on motions by the Chair
 - Recommendations on Motions on 11-02-065r2, suggesting a new element for informing 802.11 stations that legacy 802.11b elements are or are not present and providing protection for legacy stations. Text follows:

Need for a new element

- 802.11g stations need to know if any legacy stations are associated in the BSS. If no legacy stations are associated, the 802.11g stations do not need to use protection mechanisms for OFDM frames.
- The AP keeps track of associated stations, and knows (by their capability information bits) whether they are 802.11g stations or legacy stations.
- Legacy stations will not understand this new element, and will ignore it.

Element Definition

- A new element is defined, with one octet value.
- The octet contains two 1-bit fields.
 - B0 is set to 1 if any 802.11b stations are associated
 - B1 is optional. It is set to the same value as bit 0 unless optional, additional information is provided.
 - This bit may be used by “smart” APs that implement techniques to provide additional information to stations.
 - “r” bits are reserved.

Mandatory Functions

- An 802.11g conformant AP must generate this element.

- The AP must set bit 0 to a “0” if no 802.11b stations are associated. The AP must set bit 0 to a “1” if any 802.11b stations are associated.
- If the AP is not providing additional information, it must set bit 1 to the same value as bit 0.
- There is no mandatory behavior for a station. It may or may not make use of this element.
 - The recommended use of this information is to indicate the need to use protection mechanisms (such as RTS / CTS) for OFDM frames.

Use of Bit 1

- Bit 1 must be set to the same value as bit 0, unless additional information is conveyed through the following encoding:

Add a new clause to 7.3.2 (7.3.2.last+1) containing the following text:

- The legacy indication element provides 802.11 stations with an indication of the presence of legacy stations in the BSS. See Figure xx. Stations may use this information to control their use of protection mechanisms (such as RTS / CTS) for OFDM frames. An Access Point shall generate this element in each Beacon Frame. The AP shall set bit 0 to a “0” if no 802.11b stations are associated. The AP shall set bit 0 to a “1” if any 802.11b stations are associated. The AP shall set bit 1 to the same value as bit 0 unless it is providing additional, optional information. If optional information is provided, it shall be according to this table:
- *The editor is requested to assign a unique element ID.*
 - Questions and comments on this motion
 - Motion to adopt clause 7.3.2 as presented and move to incorporate into document 11- 02-065r1, slide 36, into (copy slide into these minutes) what is shown on the screen.
 - Seconded by Jim Zyren of Intersil
 - Discussion and questions on the motion.
 - Chair is suggesting a straw poll to see whether this should go to TGe for consideration.
 - Are there any objections to a straw poll on the subject?
 - Motion to “lay on the table” this from Chris Heegard until such time the members have more time to understand this. Not hostile motion.
 - Seconded by Ken Clements
 - In favor / against / abstaining: 45/0/6, Motion PASSES
 - Recommendations on Motions on 11-02-065r2, Section 9.6
 - To add text to Section 9.6 (as it appears on slide 38 as presented in bold print).

Background on Rate for ACK frames

- IEEE 802.11-1999 Section 9.6:
 - “All Control frames shall be transmitted at one of the rates in the BSSBasicRateSet (see 10.3.10.1), or at one of the rates in the PHY mandatory rate set so they will be understood by all STAs.”
 - “In order to allow the transmitting STA to calculate the contents of the Duration/ID field, the responding STA shall transmit its Control Response frame (either CTS or ACK) at the same rate as the immediately previous frame in the frame exchange sequence (as defined in 9.7), if this rate belongs to the PHY mandatory rates, or else at the highest possible rate belonging to the PHY rates in the BSSBasicRateSet.”
- IEEE 802.11b modified this section to read:
 - “All Control frames shall be transmitted at one of the rates in the BSS basic rate set so that they will be understood by all STAs in the BSS.”

- “To allow the transmitting STA to calculate the contents of the Duration/ID field, the responding STA shall transmit its Control Response and Management Response frames (either CTS or ACK) at the highest rate in the BSS basic rate set that is less than or equal to the rate of at the same rate as the immediately previous frame in the frame exchange sequence (as defined in 9.7). In addition, the Control Response frame shall be sent using the same PHY options as the received frame. “

Motion to instruct the editor to add text to section 9.6 as follows:

- “All Control frames shall be transmitted at one of the rates in the BSS basic rate set so that they will be understood by all STAs in the BSS. **For the IEEE 802.11g PHY, Control Response frames shall be sent at one of the Extended Rate PHY (ERP) mandatory rates in response to an OFDM frame as described below.**
- “To allow the transmitting STA to calculate the contents of the Duration/ID field, the responding STA shall transmit its Control Response and Management Response frames (either CTS or ACK) at the highest rate in the BSS basic rate set that is less than or equal to the rate of at the same rate as the immediately previous frame in the frame exchange sequence (as defined in 9.7). In addition, the Control Response frame shall be sent using the same PHY options as the received frame. **For the IEEE 802.11g PHY, if the received frame was sent at an OFDM rate, the Control Response frame shall be sent at the highest mandatory ERP rate that is less than or equal to the rate of the received frame.** “
 - Motion to adopt the additions to the text by Ron Brockmann
 - Second by Menzo
 - Discussion and questions on the motion.
 - Chair asks for unanimous consent for changes to the text to correct one word.
 - No objections from the floor.
 - Again, Ron moves to adopt the Motion.
 - Chair moves to vote on the motion.
 - Discussion and comments followed.
 - Short discussion followed.
 - In Favor / against / abstaining: 29/4/8, motion PASSES
 - Motion on 11-02-065r2-G where CWmin value to add sub clause 19.4.3.8.5 (as it appears on slide 39 of the presentation). Text follows:

Motion on aCWmin

- Instruct the editor to add a sub clause 19.4.3.8.5 specifying to use the table in sub clause 18.3.3 for the MAC timing calculation, with the following changes:
 - Use an aCWmin value of 15 unless in a 11b legacy network which uses the value in 18.3.3
 - aMACProcessingDelay is < 2us
- Motion to adopt by Ron Brockmann
 - Seconded Jan Boer
- Discussion and questions on the Motion
 - Suggested amendments to the wording.
 - Chair moves to accept the amendment changes to the Motion.
 - It is adopted with no objections from the floor.
 - Discussion on the amendment.
- Chair moves to a vote on the Motion.
 - In Favor / against / abstain: 39/0/4, PASSES UNANIMOUSLY

- Motion on 11-02-065r2-G on Signal Extension for ERP/OFDM to add a sub clause 19.4.3.8.6 (as it appears in slide 40 that was presented). Text follows:

Motion on the signal extension for ERP/OFDM

- Add a sub clause 19.4.3.8.6 to state that the packet is followed by a Signal Extension Field which is quiet time (no carrier) of 6 microseconds.
 - Motion to adopt by Mark Wentink
 - Seconded by Menzo
 - Discussion and questions on the Motion
 - None heard.
 - Chair moves to vote on the Motion.
 - In Favor / against / abstain: 40/0/4, PASSES UNANIMOUSLY
- Motion on 11-02-065r2-G on signal extension for CCK-OFDM to the changes (as shown in slide 41 as shown in presentation). Text follows:

Motion on the signal extension for CCK-OFDM

- Change sub clause 19.6.2.4.1 to state that the Signal Extension is quiet time (no carrier).
- Change figure 19.6.2.4.1 to indicate that the Signal Extension is quiet time
- Change sub clause 19.6.2.4.5 to specify that the Signal Extension is quiet time.
 - Motion to adopt by Mark Wentink
 - Seconded by Jan Boer
 - Discussion and questions on the motion.
 - Short discussion followed questioning text.
 - Chair moves to vote on the Motion.
 - In Favor / against / abstain: 34/0/10, PASS UNANIMOUSLY
- Motion on 11-02-065r2-G to instruct the editor to change the TXtime equation for ERP/OFDM (as shown on slide 42 as shown in the presentation). Text follows:

Motion to instruct the editor to change the TXtime equation for ERP/OFDM

- Change the Tmtime equation in 19.4.4.1 (which is currently a copy of the .11a definition) to add the 6 us Signal extension. The new equation would be:
- $TXTIME = T \text{ PREAMBLE} + T \text{ SIGNAL} + T \text{ SYM} * \text{Ceiling}((16 + 8 * LENGTH + 6) / N \text{ DBPS}) + \text{Signal Extension}$
- Where Signal Extension is defined as 6 microseconds.
 - Motion is made by Carl Andren
 - Seconded by Jim Zyren

- Discussion and questions on the Motion.
 - Short discussion followed on the validity of the equation.
 - Chair seeks objections to the amendment to the text.
 - None heard.
- Chair moves to vote on the Motion.
 - In favor / against / abstain: 39/0/5, PASSES UNANIMOUSLY
- Motion on 11-02-065r2-G to adjacent channel rejection to instruct the editor to add text to Section 19.4.3.10.1 (on slide 43 as shown in the presentation). Text follows:

Motion on Adjacent channel rejection

- Instruct the editor to add the following text to Section 19.4.3.10.1:
 - While receiving legacy 802.11b signals (1, 2, 5.5, 11 Mbps), the adjacent channel rejection should conform to the specifications of Subclause 18.4.8.3. While receiving OFDM signals (6, 9, 12, 18, 24, 36, 48, and 54 Mbps), the adjacent channel rejection shall conform to Subclause 17.3.10.2 with a +/- 25 MHz spacing.
- Motion to adopt is made by Steve Hoeben
 - Seconded by Carl Andren
- Discussion and questions on the motion.
 - From the floor to increase the rejection by 3dB by a non-voting member.
 - Yields floor on discussion until some voting member takes up their concerns.
 - Issue on the 11b versus 11a with the proposed motion to loosen the specs.
 - Concern with motion becoming a receiver specification
 - Objection to the words on “legacy” and “should”.
 - Concern on this motion becoming a receiver specification.
 - Proposal for a straw poll on changes to the wording of the Motion.
 - No objection to having a straw poll
 - Do we need this motion touches at all?
 - 17 votes
 - Those who believe we should not address this area at all?
 - 7 votes
 - Discussion to change to 25 MHz and a straw poll to see which one the body wants.
 - Prefer to keep it at 25 MHz spacing?
 - 7 votes
 - Prefer to change it to 20 MHz spacing?
 - 16 votes
 - Concern whether this would prevent us from going to a letter ballot.
 - A suggestion for a straw poll
 - Independent, would this prevent us from going to a letter ballot.
 - A motion to table the motion from Chris Heegard for further discussion.
 - Seconded by Don Sloan
 - Chair moves to a vote
 - For /opposed / abstaining: 31/1/3, PASSES.
 - MOTION IS TABLED.

- Submission (per the Chair's decision) on <missing document number, not assigned yet> for 11g receiver adjacent channel rejection (as shown in the document that presented on pages 2, 3).
 - Submission is made by Rishi Mohindra
 - Discussion and questions on the Submission.
 - Is this is directly from 802.11a specifications?
 - Move Table to another page.
 - On the server for review at venus\document\Tuesday\11-02-044r0-G... PPT version to be assigned a number by dinner break.
 - Being a receiver spec, why the need to include this and what benefit it brings?
 - Comments on adding more specs to the receiver. Addition of tests that are not needed.
 - Comment on being relevant specification.
 - Is this within the standard?
 - Concerns with creating or detailing specifications for receivers.
- Chair moves to break for dinner and reconvene at 7:00 PM

Tuesday January 22, 2002, 7:00 PM
802.11g Meeting

- Chair reconvenes after dinner break at 7:10 PM
- Chair address the members with the goals for this evening's meeting.
- Chair to continue with submission
 - Chair seeks any member to bring this submission to a motion...
 - Point from the floor about the motions that have been presented without being considered for the agenda.
 - Continued discussion about the progress of the motions...
 - Chair is looking to open the "tabled" motion, 11-02-065r2-G, from this afternoon.
 - Chair is discussing his conversation with TGe folks during the break as to its proper place here in TGg or in TGe. His comments suggests that it place is here in TGg.
 - Chair's comment is further in agreement from the floor.
 - Moved by Jim Zyren / Jan Boer seconded to bring back motion (legacy indication element) from table. Motion PASSED 30/0/5
 - Motion is to place add new clause to 7.3.2. It was requested that mover go over the 4 cases (2 bits) to see how it works. Case 11 can be optional.
 - Chair moves to a vote
 - In favor / against / abstain: 42/1/5, PASSES
- Continuation of the Submission from this afternoon <missing document number, not assigned yet> for 11g receiver adjacent channel rejection (as shown in the document that was presented on pages 2, 3).
 - Submission is made by Rishi Mohindra, non-voting member.
 - Review of the submission for Motion.
 - Motion to adopt is made by voting member Feng
 - Seconded by Shawn Coffey
 - Discussion and questions following the Motion.
 - From the floor, a concern about not having time to review the motion.

- Speaking in favor of the motion from the floor.
- From the floor speaking against the motion for a number of the reasons, those being time to review, not tested requirement(s). and called the question by Steve Halford
 - Seconded by Jan Boer
- Vote called for from the Chair
 - In favor / against / abstain: 38/2/5, PASSES
 - Move to vote on the main motion
- Vote on the main motion
 - In favor / against /abstained: 3/31/13, FAILS
- Request for a quick straw poll if it eliminated the cross interference.
 - In favor / still against: 1/30
- Comment from the floor in support for a requirement like this for the receiver. It is similar to ones already existing in the standard receiver sensitivity that is required.
- Chair is cautious on the comments now arising. Chair is suggesting that there is time in the future for consideration for this topic and motion. Chair is moving on.
- Motion on 11-02-076r0-G on coexistence of 802.11g with narrowband systems such as Bluetooth (as shown in the presentation, detailed on page(s) 2).
 - Motion is made by Jim Lansford
 - Seconded by Rob Roy
 - Motion to table the motion by Chris Heegard until tomorrow to have more time to review it.
 - Seconded by Ken Clements
 - Chair moves to vote on motion to table this motion
 - In favor / against /abstain: 27/4/14, PASSES
 - MOTION IS TABLED.
- Submission on 11-02-087r0-G on proposal for 802.11g receiver maximum input power signal level requirement be different than that of CCK(as shown in the presentation pages 2 and 3).
 - Submitted by Drayt Avera
 - Motion is made to adopt by Carlos Rios
 - Seconded by Jung Yee
 - Discussion and comment
 - Presentation providing information regarding the selection of input levels by Steve Halford, speaking against the motion.
 - Repeated comments about specifying receiver performance concerns.
 - Chair moves to vote on the Motion.
 - In favor / against / abstain: 1/46/4, FAILS
- Chair's review of motions on the table for consideration for review tomorrow.
- Question from the floor about the technical specifications and their adoption.
- Chair motions for adjournment for today at 8:46 PM.

Wednesday January 23, 2002 802.11g Session

- Chair call meeting to order at 1:15 PM.
- Quick review of today's agenda and goals.
- Explanations and plans for the formation of the draft 2.0 from motions of the last couple of days.

- Motions
 - Clarification of 11-02-065r1, editorial change...
 - Chair seeks any objections or comments.
 - Chair asks the editor to add this for clarity.
 - Motion on coexistence to have the editor to add text changes <unknown document number>
 - Motion to adopt by Steve Halford
 - Seconded by Chris Heegard
 - Discussion and questions on the motion from the floor
 - Concern from the floor about what the intention is of this motion.
 - Comment from the floor saying that in their opinion that there is no problem with the motion and does not understand the concern(s) expressed by the previous commenter from the floor.
 - General comment from the floor in support of the motion.
 - Comment from the floor by design 802.11g coexists with all other standards in the band, feels that this motion does not address concerns about other standards.
 - Comment from the floor supporting the motion by being a first cut at a statement on coexistence.
 - Comment from the floor with a concern about higher levels of interference with OFDM than CCK.
 - Comment from the floor saying that they see no problem of interference with 802.15.3.
 - Chair moves to vote on the Motion.
 - In favor / against / abstain: 41/1/5, PASSES
 - Submission on "Legacy Indicator in IBSS" <unknown document number>
 - Submission presented Matthew Fischer
 - Chair opens floor to questions and comments
 - Comment from the floor in support of the submission.
 - Comment from the floor with respect to the receiver's response to the beacon(s) and IBSS.
 - Chair asks for straw poll on extending the concept to IBSS
 - In favor: majority with no votes against
- Chair moves to the next agenda item change to the seven motions that passed into the draft.
 - Editor reviews the draft, change by change, to the attendees.
 - A call for discussion from the Chair.
 - From the floor a comment on some editorial changes that need to be added with respect to beacons that needs to be added.
 - Comment from the floor on 19.4.3.8.6 to add "/OFDM".
 - Chair is asking the editor to post the document to the server for the body to review.
- Chair calls for a recess until 3:30 PM.

- Chair calls the meeting to order.
- Request from the floor for the group to participate in the vote next door.
 - Motion to adopt by Albert Young
 - Seconded by Mike Paljug
 - 15 minute recess called, any objections?
 - No objections heard
- Recess for 15 minutes.

- Chair calls the meeting to order.
- The Chair has been able to copy the draft onto [\venus](#) from [\venus2](#).
- Chair seeks votes to move the draft to letter ballot.
 - In Favor / against: 42/1
- Chair is seeking yet any other members who have concerns with going to letter ballot with the draft 2.0.
 - None heard or seen.
- Chair is discussing the motion that was tabled by Jim Lansford. A review of the approved text in the motion by Steve Halford.
 - The text reads "...all exists with all 802.11..."
 - The Chair has stated that Jim Lansford has agreed to a change in text and will leave on the table his motion. The text will read "...all exists with all 802..."
 - The Chair has offered the motion:
 - "Move to forward Draft 2.0 of IEEE 802.11g to 802 Working Group and request that an IEEE 802.11g Working Group Letter Ballot be issued on the draft immediately flowing the close of the January 2002 session."
 - Motion to adopt by Jim Zyren
 - Second By Gummadi
 - Discussion or comment on the motion from the floor.
 - No Debate or discussion heard
 - Move to vote by the Chair.
 - In favor / against /abstain: 30/0/1, PASSES UNANIMOUSLY
 - Any objections to change the Draft 2.0 to Draft 2.1 due to the small changes in coexistence. To read as follows:
 - "Move to forward Draft 2.1 of IEEE 802.11g to 802 Working Group and request that an IEEE 802.11g Working Group Letter Ballot be issued on the draft immediately flowing the close of the January 2002 session."
 - None heard from the floor.
 - Changes approved by unanimous consent.
- Chair moves for new business
 - No new business is heard from the floor.
- Chair asks change in meeting to 1:00 PM on Thursday.
 - No objections heard.
- Chair adjourns the meeting at 4:18 PM

**IEEE P802.11
Wireless LANs**

TGh minutes of the January 2002 Session

Date: January 21, 2002

Author: Peter Ecclesine
MS SJ-10/5, Cisco Systems
170 West Tasman Dr., San Jose, CA 95134-1706
Phone: +1-408-527-0815
Fax: +1-408-526-7864
e-Mail: petere@ieee.org

Tentative agenda:

- 1) Appoint a secretary for week's meetings
- 2) Chair's status update and Review of week's TGh schedule

1 Appoint secretary

Peter Ecclesine appointed secretary for the TGh meetings this week.

2 Review of week's TGh agenda

Motion to allow presentations that have not been on the server for four hours, with the restriction that no motions consequent to the presentation be allowed for four hours after the presentation.

Moved Peter Ecclesine, Seconded Dirk Ostermiller

Yes 13 No 0 Abstain 1

3 Vote to approve or modify agenda

Motion to approve the agenda as modified: 11-02-021r1-H-TGh-January-2002_Agenda.xls

Motion Evan Green, Second Peter Larsson

Y 15 N 0 A 0

Motion to approve Austin minutes 11-01-577r0

Moved Peter Ecclesine Seconded Chris Hansen

Y 13 N 0 A 1

11-02-021 is the TGh agenda for this week

4 Co-Editor Selection

Andrew Myles volunteers to become co-editor of the draft standard, and will listen to the will of the group

Motion to approve Andrew Myles as co-editor

Moved Evan Green, Seconded Bruce Kramer

Y 17 N 0 A 2

5 Status in related matters

BRAN Harmonized Standard (the Radio Conformance Test document) and JTG in ITU-R

Mika presents 11-01-663r0 about the work in BRAN 26, December 4-7, 2001

The DFS is still so open that it will not be voted in BRAN 28, April 2002

ETSI EN 301 893 'Radio Conformance Test' (EN applies to fifteen EU countries, not the 45 CEPT countries in all of Europe). [Posted in ETSI BRAN documents 27d020. Carl Stevenson requests we look at pluto RR-02-004r0 radar detection timing, and create a response document]

The chairman of JPT5G will put what ETSI has said into a document to the FM committee of CEPT (end of February, early March).

6 TPC review

Mika presents TPC Topics 11-02-xxx

1. Power Constraint element 7.3.2.16 in d1.1 and how it related to 802.11d.
2. Power Capability element 7.3.2.17 in d1.1 also gets transformed to 1dB steps.
3. TPC Report element
4. Tolerances - Transmit power, measurements and link margin. Request Chris Hanson et al to propose TPC tolerances
5. TPC procedures d1.1 clause 9.11
6. New definitions - transmit power[EIRP], receive power

7 TPC Review

Proposed RSSI Measurement Accuracy changes proposed by Evan Green, doc 11-02-xxx

-87dBm from -82dBm as lowest level minimum receive sensitivity

-22dBm from -30dBm highest detect level

Temp range -10 deg C to 60 deg C

Lots of discussion

Move to empower the editors to update the draft text of TPC as discussed in the Monday evening session

Moved Evan Green Seconded Leo Monteban

Y 9 N 0 A 0

8 New/Missing Features

Andrew Myles 11-01-665r0_Discussion_of_Action_Frame_Proposals about 802.11e draft 7.2.3.10 Action frames

Reserve third and fourth octets for our use in our Action frames.

Reason Code in 7.3.1.7 works in disassociation as well

Status Code is missing

Motion to adopt 7.3.1.7 and 7.3.1.9 from 11-01-664r1

Moved by Andrew Miles Seconded by Evan Green

Y 8 N 0 A 0

New Channels listed by extending Table 88 of 8802.11a 17.3.8.3.3 and adding supporting text for channels 100-140 and 17.3.9.1 for maximum transmit powers.

Motion to modify Table 88 and 17.3.8.3.3 to adopt CEPT channel numbering and 17.3.9.1 to include transmit power levels for CEPT countries and to include additional text as appropriate

Moved Amjad Soomro Seconded Bruce Kramer

Y 8 N 0 A 0

PICS There are tables in 11-01-664r1, but they remain to be changed to reflect the draft

MIB There is a MIB in 11-01-664r1, but it remains to be changed to reflect the draft

Formal description of MAC operation will be brought up at the Thursday chair's meeting

Recessed for Monday at 9:18PM

9 DFS Topics

Channel Switch Announcement 7.3.2.13 in 11-01-664r1 altered to switch 'before' the next TBTT.

[Observe it is specified to work like Frequency Hopping]. See Portland July 2001 802.11h minutes 11-01-347r0 page 5, line 45 for previous discussion of Channel Switch time.

Use of containers – discussed in Austin. Andrew Myles presents 11-02-622r2 . Particular discussion of Channel survey and processing of returned values. Several questioned how use containers relate to resolving ballot comments.

10 DFS Discussion

ETSI BRAN EN 301 893 V0.h 5 GHz High performance RLAN:Harmonized EN [also appears as BRAN 27d020 in BRAN Document Files]. It doesn't address the mitigation requirement for RLANs to use all channels equally.

Next was discussion of 802-RR-02-004r0 JPT5G(02)18 Liaison statement to ETSI BRAN. Most of the Several difficulties are present in the 'Normal operation' section, where the time to measure the channel you are switching to affects the quality of the switching period.

How to command to switch in 6msec following a 10msec detection period?

How come you have to measure every 10msec in normal operation when in startup phase 30 seconds per channel is necessary?

The existence of other RLANs is also key, as they have to be discounted as radars.

The words RLAN network allows one STA to be listening while another is transmitting.

The fifth sentence in Normal Operation says that after 100nS of energy above threshold, a radar shall be declared, which is an unrealistic timeframe to identify OFDM energy.

The two main issues are the exact criteria by which you determine the energy there is a radar (how and why you know it is a radar) – magnitude and periodicity, and the second issue is the timing of measurements vs video and voice traffic that must be carried.

We need to note that the different subbands have different radar characteristics, so different characteristics should be the thresholds in the different subbands.

An ad hoc group will meet Wednesday 1pm to draft text to address JPT5G(01)18.

Andrew Myles presented a table to insert in 802.11a for Declared maximum of minimum transmit power in CEPT countries.

11 DFS Discussion

Colin Lanzl presented Reporting Mechanisms Needed for DFS to Support Regulatory Compliance 11-02-083r0 Because you can't collect data from STAs before they join the BSS, you might require them to scan all channels before they associate.

Consensus is a good presentation and we must standardize the over the air messages TPC and DFS messages

11 DSF Discussion

Simon Black presented parts of 11-01-532r0, Dynamic Frequency Selection (DFS) in an Independent BSS (IBSS) DFS Owner, Channel Maps are key concepts, a global view of channels. Notes there is no guarantee that all stations can hear a message in an IBSS. IBSS has two issues with Channel Maps – if DFS owner turns off, who takes over, and knows what? Beacons are shared in IBSS based on random times.

Is an orderly transition to another frequency required.

Question whether user experience will be so bad that we should not offer IBSS solution?

Simon believes this scheme can work in BSS with the AP as the permanent DFS owner.

Mika is there objection to try to adapt IBSS scheme for BSS, authors of the scheme were sent away to look at that.

12 DFS Discussion

Should we explore possible licensed user detections that are shared between stations?

Bit for Licensed User detected, another bit for possible Licensed User

What is needed is a sharing analysis relating RLANs (normal operation and high level loading) to the licensed users.

Threshold energy, Time to vacate the channel from threshold energy, DFS parameters to be discussed

Peter Larsson presented 11-02-069r0a Comments on exchanged TPC information

Questions about messaging protocols to convey 'link margin' – it is now an option. Alternative 2 is a possible solution. In general a good idea to reduce power level. Observe that Rx sensitivity at 54Mbps is within 4dB of the proposed radar threshold. Complementary to silencing the channel.

Straw poll of alternatives 1 and 2 in 11-02-069r0a

Alternative 1 Y 1

Alternative 2 Y 10

Amjad request a strawpoll on the use of the service field to convey 4-bits of link margin

Favoring the use of the service field 4

Not favoring the use of the service field 8

out of 21 present in the room at this time.

Amjad Soomro presented 11-02-073r0 Use of own Beacon RSSI and Power Level Adjustment Fields in DFS Reports, co-authored with Sunghyun Choi.

13 DFS Discussion

Resume Amjad's presentation. Multiple samples can be used to improve the accuracy of the RSSI levels reported Amjad's Own Beacon RSSI method adds comparability by having simultaneous measurements made and reported will little messaging overhead. This could be used to improve the accuracy of the other things measured by RSSI.

Supporting text for DFS Procedures – reviewed in 11-01-664r2 Para 7.3.2.10 TPC Request Element and 7.3.2.11 TPC Report Element.

Discussion of Tolerances for Link Margin field in TPC Report element. This is a relative number, not an absolute.

Recessed at 9:06pm

14 Joint meeting with 802-Radio Regulatory

Reviewed all names of all the documents available on the Radio Regulatory server (Pluto).

Next was discussion of 802-RR-02-004r0 JPT5G(02)18 Liaison statement to ETSI BRAN, guided by 11-02-083r0 and Colin Lanzl.

Some background was discussed, and we then returned to JPT5G discussion.

Startup phase min and max listening per channel

Normal operation sampling for radars, 20% of channel time? Response time 6msec? Average power over 100nsec forces presumption of radar?

Ideas for more heuristic methods taking in account radar characteristics like variable response times.

Need a response to JPT5G by 3:30pm Thursday to input to RR.

Vic asks how is the .11h measuring being related to .11e scheduling.

Radars C and P in BRAN26d041 are particularly difficult to detect.

The RR group will be in Lalique, but 3:30PM Wed afternoon and just after lunch Thursday have joint meetings with others.

15 Review Radar recognition with 802-Radio Regulatory

Ensemble review of RR-02-018A-d1-Report-of-802.11_h-ad-hoc-group.ppt response to JPT5G(02)18, to be sent to BRAN. Chris Hansen has a concern about the Radar people wanting a lesser threshold for simultaneous data and radar, since OFDM symbols have some variation in energy (peak-to-average).

Amjad is concerned about people understanding our definition of pulses.

CC Tsien is concerned about AGC saturation during the large pulses would make it hard to see pulses over data.

Concern about control packets to have the RLAN move off the channel, should be time bounded or energy bounded.

We jointly updated the letter and presentation to the Radio Regulation group concerning IEEE 802's response to JPT5G(02)18.

Peter Larsson presented 11-02-069r0a Comments on exchanged TPC information (revisiting the presentation given in Session 12)

Chris Hansen recalls 01-521r0 Request Response frames to do TPC from the Austin meeting

Peter Larsson TPC strawpoll request:
Link Margin added mandatorily
Y 24 N 0 A 6

Should Transmit Power be reported in TPC report
Y 21 N 5 A 10

16 TPC discussion

Motion that the Link Margin text (Section 7.3.2.19, TPC Report element format Figure 5) defined in this clause be made mandatory
Moved Peter Larsson Seconded Chris Hansen
Y 13 N 2 A 4

Andrew Myles presented 11-01-660r0 Transmit Power capabilities and constraints
Discussion will move to the reflector.

There will be two teleconferences of TGh on February 20th and March 6th,
Held at 12:30PM PST. The callin number is +1-866-902-7870 and the meeting ID is 87654321

**IEEE P802.11
Wireless LANs
TGi Dallas Interim Meeting Minutes - January 2002**

Date: January 21-25, 2002

Author: Frank Ciotti

LinCom Wireless

24900 Pitkin Rd, Suite 307

The Woodlands, TX 77386

Phone: 281-298-9922 x201

Fax: 281-419-9205

e-Mail: ciottif@lincom.com

Abstract

This document contains the minutes of Task Group I meetings held during the 71st Session of the IEEE 802.11 Working Group in Dallas, Texas January 21st – 25th, 2002.

Monday - January 21, 2002

Chair: Meeting called to order 10:45 AM

Chair: Jesse Walker asked to step down as Recording Secretary. Frank Ciotti will replace him. Any objections? No objections. Dorothy Stanley substituting now for Frank (he's late).

Chair: Introduced and discussed proposed agenda.

Point of Information: Didn't Bernard want to make a presentation on re-keying. Can we adopt the agenda and still have him present? Yes.

Are there any objections to adopting the agenda?

POI: Jon Edney was asked to present a paper on encrypting the MAC address.

Chair: Front end the schedule with items that affect letter ballot. Can we have your presentation on Thursday? Presenter agreed. Chair added presentation to agenda.

Agenda adopted, no objections.

Monday & Tuesday AM - 802.1X Re-keying, TKIP MIC, WEP

List of presentations added:

- Presentations 802.1X keying:
- Tim Moore: Re-keying
- Niels Ferguson - MIC
- Dorothy Stanley - IV Sequencing

Chair Status:

Letter Ballot 25 May 2001

Draft 1.5 discussed on August 28th

Draft 1.7 discussed on January 11th

Chair discussion: I would like to see us go to letter ballot again. We've changed the direction significantly, and have made a number of other changes. I would like to get feedback on the current direction. Put new topics on Thursday.

Comment: Can we add a discussion of OCB mode to the agenda?

Chair: Do you want the OCB discussion prior to Russ's presentation?

Comment: Agreed.

Chair added to agenda.

Chair: Go to Jesse's first presentation

Comment: Background: We have a draft 1.7. I would like to get sense of the group on our direction. Then incorporate changes into a draft 1.9 which will be issued by Thursday. Then we can debate on Thursday, to determine whether or not to go to letter ballot.

Motion by Jesse Walker (Normative): Instruct the editor to delete the old WEP2 text from the draft (in Draft 1.7, from line 29 page 57 through line 1 page 60).

Chair: Need a second.

Seconded by Albert Young

Discussion:

Comment: Does WEP2 include changes made at the last meeting?

Reply: The intent of this motion is to remove old WEP2 text, even though these were re-named TKIP.

Comment: What were the section numbers?

Answer: 8.6 is the section number

Motion to amend: Remove section 8.2.2, titled: "Improved WEP Algorithm (WEP2)", in draft 1.7.

Discussion:

Comment: Can't use the page numbers. Use the clause numbers.

Seconded by Jesse

No further Discussion.

Vote on Motion to amend: Motion passes 13-0-1

New Main Motion:

Motion by Jesse Walker (Normative): Instruct the editor to delete the old WEP2 text from the draft (in Draft 1.7, Remove section 8.2.2, titled: "Improved WEP Algorithm(WEP2)").

Discussion on main motion: None

Vote on Main Motion: Motion passes 13-0-0.

Motion by Jesse Walker (Normative): Instruct the editor to add language in the appropriate place to require the same authentication mechanism, unicast cipher suite, and multicast cipher suite to be used throughout a single roaming domain.

Discussion: Introduced motion

Second: Nancy Cam Winget

Discussion:

Chair: What is the enhancement required to ensure this?

Comment: No mechanism in mind. TGi needs to decide how to address this.

Comment: Would it be the same single authentication mechanism?

Comment: The current draft, can re-start completely.

Comment: Can we have plurals on the mechanisms?

Comment: All 3 require the Station or AP to respond to at most 1.

Comment: Is this a requirement on the vendor producing the product, or on the enterprise? Can this be required?

Comment: Share your sentiments. If we don't restrict this, then we'll have unreasonable level of conformance testing on the vendors.

Comment: We need a more detailed definition of a roaming domain.

Comment: It is "From where one can roam and do a Fast Handoff". It may coincide with an ESS, or may span several ESSs.

Comment: Would that mean that you have to do an all or nothing upgrade in a roaming domain?

Comment: Yes

Comment: Are you proposing this because the session key is transferred? There is confusion over what is Sent.

Comment: It is not my issue. I'm not in favor of this. We need to figure out how to close on the issue.

Chair: If the first association was AES, then roam to an AP that supports TKIP.

Comment: If we need to set a client policy, we can do that now.

Comment: Can we tell TGF that we are making this change?

Comment: Why should they care?

Comment: No, need us to take a stand. It may be premature. We need to hash out our relationship with TGf. Maybe we can't resolve this now.

Comment: Why must this be normative? TGf is not normative. Perhaps it should be informative.

Comment: Motion is to make normative. Does TGf believe that this should be informative?

Comment: Suggest switching keys is dangerous. I would be in favor if this is acceptable to users.

Comment: I object to single authentication. Would this require only one?

Comment: Address roaming.

Chair: Is the negotiation protected? Should it be protected in some way? If an administrator says "only AES", then attacker can try to get in with TKIP?

Comment: In AES algorithm, there is protection on authentication algorithms, they are used to construct the key. Consider using this kind of construction to all of the keys.

Comment: That makes it harder on the vendor - they have to support everything going forward.

Comment: We need to come to a resolution.

Comment: We need resolution; I want to close the issue in the document. We need to decide one way or the other.

Comment: There are two cases. If the user is roaming, and wants to change completely, they should be able to change. If Fast-Handoff, then must stay the same.

Motion to Amend:

Amendment text: Instruct the editor to add language in the appropriate place to require the same unicast cipher suite, and multicast cipher suite to be used when performing fast-handoff.

Second: Al (Albert Young?)

Vote on motion to amend: Passes 15-0-0

New Main Motion:

Motion by Jesse Walker (Normative): Instruct the editor to add language in the appropriate place to require the same unicast cipher suite, and multicast cipher suite to be used when performing Fast-Handoff.

Discussion on new Main Motion:

Comment: If new AP doesn't support the old cipher suites, then will new authentication occur?

Comment: Yes

Comment: Do we preclude existing implementations?

Comment: No

Vote on motion: Passes 9-0-6

Motion by Jesse Walker (Normative): Instruct the editor to remove WEP from Table 2, labelled "Cipher Suite Selectors", of negotiated cipher suite selectors, of draft 1.7

Second: Jon Edney

Vote on Motion: Motion passes 8-0-6

Motion by Jesse Walker (Normative): Instruct the editor to clarify the TKIP cipher suite selector in Table 2, of draft 1.7, to indicate this uses the mixing function and MIC specified in Annex F of the draft.

Seconded: Onno Letanche

Discussion:

Comment: Intent of motion. We have made TKIP partially normative and partially informative. The text allows any MIC function and mixing function. The intent is to pin down the MIC and mixing function to the ones discussed here. One of the mandatory to implement parts is to implement the re-key EAP-OL.

Comment: The real problem is that TKIP is not defined in the normative section. It is better to define it properly.

Comment: The point of the motion is to make progress on the definition of the ciphersuite.

Comment: It is important to specify what the ciphersuite selects.

Vote: Passes 12-1-2

Motion by Jesse Walker (Normative): Instruct the editor to incorporate the following text in clause 8.2 of the TGi draft:

Legacy 802.11 authentication and WEP are deprecated. Whenever feasible, neither should be implemented in new equipment. They may be implemented for backward compatibility with legacy equipment only, and if implemented, they should not constitute the default security choices.

Second: Nancy Cam Winget

Discussion:

Comment: Is this really needed?

Comment: We need to close the issue.

Comment: We need a way of saying what is and is not secure.

Motion to amend: Delete sentence "Whenever feasible, neither should be implemented in new equipment".

Second on motion to amend: Dorothy Stanley

Discussion:

Comment: The text should state what the default is, not what it isn't.

Comment: We should agree on the default. Can it be selected as a UCSE element?

Comment: A vendor could build an old WEP implementation, and there would be no negotiation. WEP will still be used even if it isn't negotiated.

Comment: Today we negotiate via configuration.

Vote on motion to ammend: Passes 11-0-3

Motion by Jesse Walker (Normative): Instruct the editor to incorporate the following text in clause 8.2 of the TGi draft:

New main motion:

Motion by Jesse Walker (Normative): Instruct the editor to incorporate the following text in clause 8.2 of the TGi draft:

Legacy 802.11 authentication and WEP are deprecated. They may be implemented for backward compatibility with legacy equipment only, and if implemented, they should not constitute the default security choices

Discussion:

Comment: How strong is "should"?

Comment: Not normative, not mandatory. Some text is in the draft to make political statements.

Vote on Main Motion: Passes: 14-1-1

Recess: for lunch

Resume: 1:00pm session

Motion by Jesse Walker (Normative): Instruct the editor to remove second paragraph of TGi draft 1.7 clause 8.2.2.1 Introduction, which is the paragraph reading:

Data confidentiality depends on an external key management service to distribute data enciphering/deciphering keys. The IEEE 802.11 standards committee specifically recommends against running an IEEE 802.11 LAN with privacy but without authentication. While this combination is possible, it leaves the system open to significant security threats.

Second: Nancy Cam-Winget

Discussion:

Jesse: I'm not sure if it belongs here. Do we delete the text entirely, or move it?

Comment: Is it better to place in Section 5? Clause 5.4.3.4 talks about key distribution, and not key mgt. Propose to move to this section.

Comment: For: Advise against keeping text. It doesn't make to much sense. It would require a re-write to keep it.

Comment: For: Sections 8.2.2.2/3 are provided for backward compatibility. I suggest replacing 8.2.2.1 & 8.2.2.2 with text stating that this has been deprecated.

Jesse: I removed marketing type text and placed it as informative

Vote: 13-0-1 Passes

Motion by Jesse Walker (Non-normative): TGi calls for proposals at the 802 Plenary meeting in St. Louis, March 2002, for incorporating the aspects of Association and Re-Association required by TGi security into the IBSS architecture.

Discussion:

Chair: Association/Re-assoc is already defined. Do we need to go beyond this?

Jesse: That is for the body to define.

Chair: Is there a deadline or it will be removed?

Jesse: The motion is open to friendly amendments.

Chair: We may want to amend this to make this clear.

Comment: It may be better to discuss this with the TGe joint mtg.

Second: Dorothy

Comment: The current security solution is not supported in an IBSS. We should consider if our solution applies to the IBSS.

Chair: We talked about this before. It's not very clear and it makes sense to make it clearer.

Comment: The re-use of Assoc/Re-assoc may run into a problem because it is not present in IBSS. Some other mechanism is needed.

Chair: If vendors wanted to implement TGi, Assoc needed...

Jesse: If we don't get features required for IBSS, ...

Comment: If we force Assoc in an IBSS, is the STA an AP?

Jesse: The point of the motion is for people to fill in what that means.

Chair: Implicate deadline in motion.

Jesse: The intent was to start making a decision by that time.

Comment: Against: We can get security in an IBSS without forcing an Association. Shared key.

Jesse: The motion does not call for including Association in IBSS, it calls for the mechanism needed to make the security architecture work.

Comment: We tied those into Association because it was convenient - not necessary.

Comment: Tied to 802.1x?

Comment: Jesse is calling for proposals of how we can do this in an IBSS.

Jesse: Currently we don't have text for ...

Vote: 8/3/3 Passes (procedural)

Motion: by Jesse Walker (Non-normative): Instruct the editor to propose text for inclusion in Annex F by the 802 Plenary in St. Louis, March 2002, specifying the Michael message integrity code and its use in TKIP.

Motion: Direct the TG_i to raise the following issue with Exec Com: To enable adequate review, take all necessary steps to assure that all TG_i documents including its drafts, are publicly available on one page of the 802.11 web site.

Second: Nancy Cam-Winget

Discussion:

Comment: Currently, drafts are only available on the private area.

Comment: We need to put a procedure in place for allowing discussion as well.

Jesse: Before the discussion makes sense, we need to fight the political battle of allowing the draft to be public for this one draft.

Chair: I'm in favor of this. It would be difficult to get passed - you have to be a voting member.

Comment: A venue for comments to will cause a parallel discussion group.

Chair: You must be present to comment.

Comment: Against: The discussion will take place in the press. We'll be attacked for publishing a poor draft.

Comment: For: Public review is the only way to catch the issues you would normally catch after the draft is published.

Chair: If it's a valid comment, listen to it. If we wait until it is a standard, it too late to make any changes.

Comment: For: The logistics of getting feedback can be worked. At the Microsoft meetingg, a Berkeley student did not have access to the private area.

Comment: For: People who want to participate don't have access to documents.

Comment: For: It is not perfect, but we want feedback from those not in the IEEE loop.

Comment: Is there anything that prevents a member from forwarding the document on non-members?

Chair: not sure

Jesse: I am always worried about sending the document out. I would like clarification of the rule.

Chair: When I am asked for the draft, I point people to the web site.

Comment: The motion says **all** documents.

Jesse: Send them to a URL.

Comment: The copyright statement on the draft indicates that the draft cannot be forwarded to non-members.

Comment: For: It is important for us to be able to make this available for review to non-members.

Comment: The Chair could make a decision of who should have access to the documents for review.

Comment: Once WECA starts publishing that we have a solution, what is the availability then?

Chair: Those docs are not available to everybody. Some are simply referenced.

Jesse: Not just Michael - it 's all the docs that we want reviewed.

Comment: In the past, drafts have been published as a paper in some other forum

Jesse: We need to be careful regarding the copyright issues.

Comment: For: All docs are already sorted for TGe.

Vote: 11-1-2 Passes

Presentation: Bernard Aboba/Microsoft - Document 11-02/104 "EAP Keying Overview"

Discussion:

Comment: The EAPOL has keys that it uses. Where did the keys themselves come from?

Bernard: We will talk about those. The master session key is larger than any transient key you will need.

Comment: Explain NAS

Bernard: Network Access Server

Comment: what is PRF2 used for?

Bernard: IV

Bernard: Tim - is MIC key (MS-MPPE-Send-Key(APEncKey) correct?

Comment: MIC key is correct from the Authenticator's point of view.

Comment: I'm getting confused with the term management frame.

Bernard: Referring to 802.11 management frames.

Comment: Required for roaming.

Bernard: I thought we eliminated Deauthentication.

Jesse: We had to retain it for the legacy scenario.

Comment: What is the Transient Session Key?

Bernard: The Transient Session Key is used to encrypt data. Some crypto separation is needed between all the keys.

Comment: Would 3079 be a good example for a cipher suite key for TLS?

Bernard: You need to define the derivation for the specific cipher suite you are implementing.

Bernard: For the multicast key you cannot use a nonce. For unicast key it is okay.

Comment: It would be helpful to describe how the master key is generated.

End of discussion.

Chair: People who are interested in the letter to the IETF for EAP WG should get to together for an ad-hoc discussion.

Recess to 3:30pm

Resume 3:30pm Session

Presentation: Tim Moore - Document 11-01/667r1 "Text for 802.1X Rekeying Proposal"

Discussion:

Comment: A different word should be used for Signature - confusing. Call it a MIC.

Tim: Agreed.

Comment: Is there agreement on the number of bits for Nonce?

Tim: Not defined here.

Comment: I am confused on the magic secure channel between old & new AP. I Don't know how to do the security analysis. TGi always says TGf is defining it. TGf says TGi is doing it. Also, this is really defining a 3 party protocol. We assume that we can plug in two of the parties and that it is secure - I don't buy it.

Comment: TGf will supply a non-secure UDP transport. The security is in the bubble.

Comment: We can discuss this in the TGf/TGi joint mtg.

Comment: We need to agree on the authentication sequence.

Comment: We don't know that nonces will work until we know what the back-end protocol is.

Comment: Can you get in a situation where a station will flip-flop between AP's if it continues to fail authentication?

Tim: Yes, if coded poorly.

Comment: When the key is handed off, do you use the new key immediately?

Comment: Comment on Keying slide - encryption key implies transient session key

Comment: In the past we've used the term temporal key. Where would the temporal keys come from here?

Comment: The truncated transient session key

Comment: You cannot forget the truncated portion - it is needed for generating new keys.

Tim: Should I change the truncated transient session keys to be temporal keys?

Jesse: I'll need guidance.

Comment: I suggest the term operation session key.

Comment: We should stick with EAP terminology.

Tim: There are MIB conflicts.

Jesse: The MIB Needs to be cleaned up.

Comment: Delete that section of the MIB and define a new one.

Jesse: Bernard's presentation was TLS specific. Other methods need to define their own. A better source of randomness than the MAC address is needed.

Tim: Everyone needs the same value of randomness.

Comment: Are symmetric keys used?

Tim: yes

Comment: Have you thought about the impact with QOS? Do 802.1x packets need to be at a higher priority?

Tim: Yes - that's probably going to be required. We should probably use the IETF rule of priority 7 for management traffic.

Comment: TKIP counter measure may change our mind on whether we need a specific acknowledgement.

Comment: Where is the right place to discuss the RADIUS attributes?

Comment: The RADIUS WG is dead.

Tim: We should go to the IESG.

Comment: Key descriptors: Would you want to use AES CTR mode for the encryption?

Comment: We have two now, do we need these two?

Comment: Is there a way for the station to initiate the key derivation?

Tim: no

Tim: Is the same IV used for retries? What was decided at TGe/TGi mtg at the last session?

Comment: Yes. This is okay because it is the same data.

Comment: The term sequence number should be changed to IV to avoid confusion.

Tim: Agreed.

Comment: Could Tim address problems with adopting some, but not all motions?

Tim: It won't work. Some pieces are absolutely required. Some could be added later.

Comment: It would be unfair to have a ballot at this time without a chance for people to review it.

Chair: We're trying to go to Letter Ballot.

Comment: Including only pieces of this are going to confuse people.

Chair: We should try to prioritize it.

Comment: Two options: Try to get it all. If it fails, go back and try it piecemeal. If a piece doesn't get in, go back and try to fix it, or put something else in its place.

Comment: It doesn't make sense w/o all the pieces, but some parts are more mature than others. If we find something that is onerous, voters could vote to block a change to protect their equipment.

Comment: It is dangerous to leave pieces out. We should not put in normative text in unless we feel it is good. It is difficult to get out later.

Tim: I propose to vote the whole text in as information, and then go piece by piece voting on normative.

Comment: We need to discuss changes to existing text before voting.

Comment: We should adopt Tim's document as a baseline. Once it appears we have a 75% agreement. Then we vote to put it in the draft.

Comment: Certain parts are needed to implement 802.1x. We should attack those first. We could have different implementations if we provide no guidance.

Comment: If we want to go to Letter Ballot, we need to incorporate all text so people can understand it. Can we include the whole thing as informative?

Comment: Is our goal to have as much content in the draft that goes to Letter Ballot as possible? Are we trying to identify the areas of controversy?

Chair: Generate an outline of solutions.

Comment: It is much better to put all text in instead of doing it piecemeal. Instead having the editor put it all in before Letter Ballot, ...

Comment: If we put draft to Letter Ballot and it passes, can we withdraw it if we find a problem?

Chair: Yes. We need to vote on going Sponsor Ballot.

Comment: How do we prevent manufactures from incorporating the current mechanism and them blocking us from changing it later?

Comment: In the long run, it may be better to resolve this issues now.

Comment: The way to accomplish that is to go piece by piece.

Motion by Tim Moore: To incorporate document 01/667r1 into TGi draft with instruction to the editor to include the text marked as "normative" as informational with editorial text "This section is intended to be normative when appropriate motions are passed"

Second: Alan Chickinsky

Discussion:

Comment: What is needed to change from informative?

Comment: 50% + 1

Comment: What will that look like if we include all text as informative?

Chair: It will be viewed as compromise.

Jesse: It would be ugly. We want feedback on the re-key approach. This is the only text we have to use.

Comment: Text is not mature yet, but progress on Tim's draft has been good.

Comment: We can still put it in now, and then improve it over the next one or two meetings.

Tim: We wanted feedback from the Letter Ballot.

Comment: We should include the text for wider distribution.

Comment: Why is there a wider audience

Comment: People are forced to look at it if it is a Letter Ballot.

Question called.

Vote: 17/6/7 passes

Comment: If everyone voted on the text as is, can it be changed before being added to draft?

Comment: No

Presentation: - Dorothy Stanley; Document 02/006r1

Discussion:

Comment: The TGe draft states 16 MPDUs, which means up to 256 fragments.

Dorothy: Understood. We can make changes to the proposal in the future.

Comment: On the sending side, host needs to...

Comment: The MIC cannot cover the IV.

Comment: Fragmentation cannot be supported.

Dorothy: The IV will not need to go to the host.

Motion: Direct the editor to add the text in Section 2 02/006r2 and the proposed text in Section 3 into Annex F, Clause 1.1

Second: Jesse Walker

Vote: 24/1/3 Passes

Motion: John Edney

Second: Dorothy Stanley

Discussion:

Comment: What ends up being required for security?

Chair: The PICS says what is mandatory and optional. TKIP is optional, AES is mandatory.

Comment: Do you mean the algorithm specified in Annex F is the mandatory to implement TKP MIC and TKIP Mixing function?

Jesse: The intent is to indicate a clear definition of what TKIP is. Make it normative and remove ambiguity. This by itself doesn't accomplish that.

Comment: As the draft is written now, it would not appear at all.

Chair: Correct.

Comment: The way it is written now, we must implement MIC, mixing,...

Comment: The Editor is still not clear on what to do if this passes.

Comment: Two problems: The algorithms we are defining are for TKIP are TKIP. They are not suggested. Second, where does TKIP fit in the document?

Jesses: Does it suggest more than one algorithm?

Comment: No

Comment: If this passes, changes to Annex F become Normative

Comment: Do changes to Annex F now require 75%?

Comment: Yes

Chair: A 75% vote is required for normative text. There was an error made before break stating it was 50%.

Comment: There is much discussion on the topic that it was a compromise to put TKIP in the draft as informative.

Comment: We've discussed TKIP algorithms to a great degree. The algorithms we discussed before dinner are new. We haven't discussed them as a group. There is maturity here.

Comment: TKIP is really just re-keying on per packet basis. Key distribution is not clear.

Chair: This only has to do with draft 1.7.

Motion to amend: Replace original motion with:

To make the algorithms in Annex F the algorithms for TKIP, and make TKIP normative and optional.

Second: Albert Young

Vote on motion to amend: 19-0-1 Passes

New Main Motion: To make the algorithms in Annex F the algorithms for TKIP and make TKIP normative and optional.

Second: Dorothy Stanley

Vote: 19-0-1 passes

Presentation: Niels Ferguson - Michael (MIC) document

Discussion:

Comment: Why is the IBSS case fundamentally different?

Niels: If every station stops listening for one minute, the attacker still gets 200 attempts per minute using the broadcast key.

Niels: The document does not indicate which header fields are covered by the MIC. The TGi draft discusses this.

Comment: What kind of attack can a person do. If you flip a bit the CRC will catch it.

Niels: If you flip a bit in the packet, you can figure out which bit in the CRC/ICV to make it match. If it passed CRC/ICV and fails the MIC, then we know there is a smart attacker out there.

Niels: Both MPH and MMH have 26-28 bit security level. 30 bits are insufficient unless you have countermeasures.

Comment: Can you talk about countermeasures?

Niels: The countermeasures are triggered when you detect a packet with a forged MIC. The goal is 1) to destroy temporal key you were using & re-key.

Comment: This exposes a DoS attack.

Niels: There is no way to avoid a DoS attack.

Niels: 2) log it to the user. 3) rate of detection should be kept below 1 per minute. When STA detects a forgery, Disassociate and Re-associate with a bit set indicating why it is Re-associating. AP then knows not to let one of these types of Re-associations succeed every minute.

Comment: to have this discussion we need a motion.

Niels: I was answering questions on the presentation.

Comment: RSA looked at this and the conclusion is that 20 bits is well within what is expected.

Comment: Are there Copyright issues?

Niels: No known patents on this. An IP statement has been submitted.

Comment: Could you summarize what the countermeasure is going to be?

Niels:

AP:

- Delete temporal key
- Disassociate station
- Log event
- Disable both receiver & transmitter on the AP
- ???
- Re-enable receiver & transmitter
- Station automatically Re-associates

STA:

- Delete keys
- Disassociate
- Send mgt frame to AP detailing MIC failure

Comment: couldn't that be forged?

Niels: yes

Niels:

- Station then Re-associates with a bit set to inform the AP of MIC failure.
- The AP will pace these at one per minute.

Niels: Association Request is authenticated so it can't be forged.

Comment: The 1 minute value should be a MIB variable.

Niels: Security parameters should not be configurable. We're cutting it close with 20 bit security. 1000 CRC errors/sec yields one false positive per month. Two of these Re-association frames in one minute is **very** unlikely.

Comment: We shouldn't be worried about noisy DoS attacks. If two packets once/minute does it, is the computation required to forge two packets doable in less than 1 minute?

Niels: Yes. You need to modify an existing packet.

Comment: A pass-through AP could force a Station to Associate to it to see the ciphertext.

Niels: Yes

Comment: This countermeasure is the least onerous of the ones considered. It is the most implementable on the APs that are deployed.

Comment: What advantage is there to shutting down the entire BSS if there is a per station key?

Niels: If there are 200 Stations on the BSS - Without countermeasures, the attacker could forge 200 packets per minute.

Comment: Shouldn't the IT manager recognize the attack?

Niels: Don't trust them, they'll disable security to make the alarm go away. The IT guy is not your ally for security.

Niels: To receive an encrypted frame, but stop the destination from receiving the frame, the Attacker jams only the CRC portion of a packet to force an error. He knows what the CRC is - he can calculate it.

Motion by Niels Ferguson: Move to instruct the TGi editor to work with Niels Ferguson to incorporate Michael document 02/020r0 as the normative MIC for TKIP.

Second: Ron Brockman

Discussion:

Comment: For: The process we went through to agree upon Michael was difficult. This was a choice we did not like, but all the other options were significantly worse. Other options could only be implemented on a small fraction of APs.

Comment: Should countermeasures be informative or normative?

Niels: I believe we must incorporate countermeasures as stated (normative)

Comment: Do the countermeasures include IBSS?

Niels: There is nothing for IBSS at this point.

Comment: There is nothing for BC/MC either.

Comment: If AP allows both TKIP and WEP stations, does that mean that every Multicast is sent twice?

Chair: Yes

Comment: Why do the mc countermeasures need to be different?

Niels: We don't know yet.

Vote: 23-0-2 Passes

Comment: Before moving on to AES, Greg would like to talk about a EAPOL re-key variant without key material to flip key index. Should I generate some text regarding this?

Comment: Wow would this work? If you receive one of these frames without key material, how do you know to accept it?

Comment: How do you know to not let this happen?

Comment: Greg is offering to make a proposal on this.

Comment: Would now be a good time to go through the details of the re-keying that we adopted as informative?

Chair: We are going to leave it as is until we go to Letter Ballot.

Comment: If we were to start AES discussions early, would anybody be missing?

Chair: We're unable to know.

Chair: The group would like to see Greg's proposal

Greg will try to get this done.

Chair: Move on to AES modes

OCB Mode Discussion

Comment: Patent discussions from IBM will hold this group harmless. There is a lack of initiative to validate OCB.

Chair: IP statement from ?. Also, we can't discuss pricing

Comment: (Greg) we are equally concerned about licensing OCB. All three have terms on file. There will be a forthcoming statement from all IP holders. The terms that Rogaway offers is a fixed fee, the other two will follow suit. The rules don't allow IEEE to ask the question. In a couple of weeks, a statement may be available on the web site answering some of these questions.

Comment: Is it improper to discuss pricing on source licensing?

Chair: Yes

Comment: Phil's website has pricing

Comment: Do you pay all three IP holders?

Comment: Worst case, yes. But that is unlikely.

Comment: At NIST, they knew this was going to take some time. All the other algorithms have not been ruled out.

Presentation: Russ Housley - document 02/001ar0 "AES Encryption & Authentication Using CTR Mode & CBC-MAC"

Discussion:

Comment: Are you proposing that the entire header is encrypted?

Russ: Only the non-mutable fields.

Comment: MSDU or MPDU?

Russ: It would work either way, I suggest MPDU

Comment: What key?

Russ: There is only one key.

Comment: Assuming pseudo random permutation for the block cipher?

Russ: Yes

Comment: For key generating, are we always running through the same set of fours?

Russ: There are n changes for each pkt, c changes for each block.

Russ: This is a plaintext block, not the key.

Comment: It's like WEP with a better cipher.

Comment: Do you require twice the number of AES operations than in OCB mode?

Russ: Actually 8/3rds.

Comment: Neils - not 8/3rds. Factor of two.

Comment: This IV needs to be made bigger to make room for the bits.

Russ: No, we have room.

Russ: We are considering using the same algorithm in a IPSEC document.

Comment: We should allow more than 16 bits for length.

Russ: It is not an issue here - 4k max pkt size.

Comment: Can you compare OVB with this?

Russ: It would be best to refer to document 01/634r1

- No patents on CTR mode or CBC-MAC.
- CTR w/CBC-MAC is smaller than ARC-OCB. Greg says maybe not that much difference.
- OCB is twice as fast as CTR w/CBC-MAC.
- Cleartext integrity coverage: with CBC-MAC, an arbitrary number of plaintext bytes can be covered.
- Both require 128 bit keys.
- Packet overhead the same.
- OCB is new but there is a proof. CTR w/CBC-MAC is 20+ years old with new proof.

Comment: is your proposal mature now?

Russ: Yes

Comment: Question for chair - We now have two complete proposals. How do we go forward?

Chair: A motion is needed to replace AES OCB.

Comment: When will proof be finished?

Russ: In about a month.

Comment: What data rates are supported?

Comment: In hardware, AES is about a gigabit.

Comment: There is no compelling difference between the two based on speed.

Comment: Since there are a number of OCB implementations far along, Greg would like to have one optional.

Comment: Which one?

Russ: The IP encumbered one would be the one to make optional.

Comment: Greg looks as CTR mode as an insurance policy. There is no compelling reason to change OCB plans now. We do not want legacy chips with OCB not to be able to talk to any future chipset. If group removes OCB, there will be OCB stations out there.

Recess: Until 8:00 am tomorrow morning

Tuesday, January 22, 2002

8:10am

Chair: We are ahead of our agenda. We've moved ahead into the AES sessions scheduled for tonight and Wednesday.

Russ has a follow-up on his presentation he would like to present. Then we will get into the motions that are queued.

Presentation: Russ Housley - document 02/001ar0

Russ: I Neglected to mention the significance of including the Transmit Address. It provides protection against pre-computation attacks. There are 2^{64} keys. The attacker needs to build a dictionary per transmitter.

Comment: If you target an AP, do you know the key info?

Russ: Yes

Comment: Not only per transmitter, but per packet number.

Russ: Correct. This makes these attacks nearly infeasible.

Comment: Is the pkt number sequential?

Russ: Yes

Comment: How many bits are added to each pkt?

Russ: Up to 32 bits.

Motion: by Dorothy Stanley:

To instruct the TGi editor to include AES CTR with CBC-MAC as per document 02/001 as the normative and mandatory to implement encryption algorithm. Include AES-OCB as the normative and optional algorithm.

Discussion:

Comment: All three patent holders have submitted IP statements w/IEEE. Is that true?

Chair: I haven't seen one from IBM.

Comment: That has been done in the past 24 hrs.

Comment: Is there a number assigned to OCB mode for cipher suite negotiation?

Chair: We need to follow up on that.

Comment: What is the solution for nonce stealing?

Comment: The TGi editor is not willing to undertake work if the group wants to remove OCB.

Comment: The cryptographers tell us not to use the same key for two different algorithms. Which is what CBC-MAC does. A proof is forthcoming. OCB is new, but so is TKIP. There is no compelling reason to make a change right now. For some people, the IP issue has not been cleared up. This is not a good reason to make a change. The same arguments should be applied to both algorithms.

Comment: Having something optional sends the wrong message. I would prefer to have one or the other. Market view.

Comment: The comments made regarding OCB were not an attack on OCB, rather an attempt to get the groups feeling on OCB. I feel it is also premature to make a change.

Chair: What are the interoperability issues?

Comment: If we make changes, existing implementations will need to change from OCB to CBC-MAC.

Comment: I acknowledge that it would be better to have only one algorithm. The issue is that there will be OCB silicon on the street.

Comment: I support the motion. OCB is too new. CBC-MAC is stable.

Comment: CBC-MAC does use a novel approach with the use of the key twice. The record in the crypto industry with copyrights is abysmal.

Comment: I suggest that CBC-MAC should be adopted as optional.

Comment: Having both algorithms adds a lot of complexity (gates) to the hardware.

Chair: Regardless of which algorithm is selected, which fields would you want to protect?

Comment: This is something that needs to be reviewed for both modes

Comment: For the fields we want to protect, is the nonce stealing large enough?

Comment: Do we need the WEP bit any more? If yes, we should abandon nonce stealing and go with Associated Data.

Comment: If we want to cover more fields than we already defined, or increase the IV size, we need to move to Associated Data.

Comment: The operation is over the MSDU. We may need to change to MPDU for QoS to work. Sequence numbers are then an issue.

We need some compromise to reach 75%.

Comment: Support for motion: We would eliminate risk from lawyers. This is a way to come to a consensus

Comment: Against: OCB is one of the few stable parts in the draft. There are complaints that it is too new, but we are replacing it with something newer.

Call the question.

Vote on calling the question: 27-2-8 passes

Second to Main Motion: Albert Young

Vote on Main Motion: 24-12-3 fails

Straw poll: Would you support a motion to support AES CTR mode with CBC-MAC as the only selection?

Vote: 34-18-7

Comment: A mechanism is needed for selecting the method

Chair: We have that today.

Straw poll: - Would you support a motion retaining AES OCB as mandatory and AES CTR mode with CBC-MAC as normative and optional?

Vote: 4-42-12

Chair: Recap - OCB mode is still in the draft. CTR mode with CBC-MAC is not. I suggest that we recess until the 6:30pm session to work on the letter to the IESG & IETF.

Comment: Could you explain the purpose of the letter?

Chair: Desire is to create an EAP IETF WG. We would like to have input into the charter of the EAP WG.

Chair: Any objections to recess?

None

Recessed until 6:30pm

Resume 6:38pm

Chair: We left off with AES modes. Russ wanted a couple of closing comments before we move on. There will be joint TGe & TGf meetings on Thursday morning

Review letter drafted to IETF/IESG.

AES Modes – Russ Housley

Russ: Regardless of the decision, we are going to be facing a change in the protocol because of the larger IV. Once that is opened, we may want to change other things as well, e.g.. increase 2 bit space for key id.

Presentation: Greg Chesson - Document 02/071r0 “EAPOL-Key clarifications”

Greg: This is needed for legacy hardware that can maintain only a single key.

Discussion:

Comment: How would the AP know when to use this method?

Greg: The AP is the one with the problem, so it would know of its own limitations.

Comment: Adding Greg’s explanation as informative text would be very beneficial.

Greg: I could write this if it is wanted.

Comment: I’m worried about the new message. We don’t throw away the old key material.

Greg: Tim’s method doesn’t do that. This is a modification of Tim’s document.

Comment: Now attackers can maybe play games in getting the STA to switch keys.

Greg: This should be sound because of the strength of the key management protocol.

Comment: All key material is thrown away when Re-Associating or Disassociating.

Comment: The key is implicit and not authenticated. Perhaps adding the hash of the key may be needed.

Greg: This is trivial to add, but I don’t think we need it.

Comment: It is safer if we add the key hash instead of the key material.

Greg: A key length of zero implies there is a key hash there instead.

Greg: The AP would need to keep the keys, the STA only keeps the hash.

Comment: In an IBSS case, the keys would need to be retained.

Comment: In Tim’s proposal, is retaining the keys a “may”?

Greg: No, it is a “must”.

Comment: One must loose the keys on re/disassociate and...

Greg: There is additional burden on the STA that the AP is performing this, and to retain the key hash. A method for negotiating this needs to be addressed.

Comment: How is the out of order (QoS) problem handled?

Greg: Same as the method used without this proposal. There is a period of time where both keys need to be active to account for QoS queues being flushed that were encrypted with the previous key.

Comment: It seems you are throwing away the "ping" key message too quickly. There may be residual messages in queues on station encrypted with the old key.

Greg: I left it to the spirit of the document to resolve the "skid" issue.

Comment: Is it your intention to retain the same re-key key for multiple messages?

Greg: Yes, until the IV space for re-key is exhausted.

Comment: Is the re-key key different for each STA?

Greg: Yes

Greg: Tim Moore performed experiments with a non-handshake re-key algorithm & UDP. The packet loss wasn't that bad.

Comment: In existing hardware, encryption is done in hardware so if there is a re-key, the new key can be applied immediately to the next message to be sent. With new re-key (TKIP), host is involved so there will be more residual packets encrypted with the old key.

Greg: True

Comment: I suggest that you rephrase the term used for zero key length message to be a compression option. Some linkage of message to key.

Comment: 802.1x already allows you to do this.

Greg: We need to check this out

Comment: I did.

Comment: The new TKIP descriptors have no definition for a key length material of zero.

Greg: There is precedent.

Comment: 802.1x does not do this.

Comment: Clause 7.6.7. in 802.1x

Motion by Greg Chesson:

Instruct the editor to work with Niels Ferguson and Greg Chesson to incorporate the appropriate informational text as exemplified in document 02/071 for fast key switching in TGi draft 1.7 as defined in document 01/667.

Second: Jesse Walker

Vote: 19-0-4 passes

Chair: We are finished with the AES discussion. The Editor is adding changes needed to go to letter ballot.

Editor: All text is in except for new changes we just voted on. If I receive new text tonight, I will try to have a new draft on the server tomorrow morning for review. The text needs to be on the server 4 hours before a Letter Ballot vote. It is a two-stage process. The Task Group reviews the new draft, and then the editor makes any modifications before the motion to full Working Group on Friday.

Chair: Work has been done on the letter to the IETF/IESG.

Chair: Can we have the presentation on stream cipher scheduled for Thursday now? [presenter not present]

Chair: Move on to the review of letter to the IETF/IESG.

Presentation: Dorothy Stanley - document 02/040r0 "EAP Group Letter"

Dorothy: The purpose of the letter is to provide the IETF with IEEE TGi's expectations.

Chair: EAP authentication types are out of scope for us. At the last IETF PPP WG meeting, the chair had more proposals than he could handle. If a new WG gets started, we would like input into it's charter.

Discussion:

Comment: Looks fine

Comment: If we adopt the letter, can we wordsmith?

Comment: What concerns are there?

Comment: Grammatical, not informational.

Comment: Can you elaborate on the EAP keying framework?

Chair: When an authentication type receives keying material, it is for a particular usage. This defines the usage.

Chair: If we do not provide a letter, an EAP WG may not be created, or its charter may not include EAP types.

Comment: Is there a timeframe?

Comment: This in an introductory letter. There will be follow-up letter.

Comment: Could we have a more cordial introduction? It seems harsh.

Chair: We already started discussions with the IETF/IESG.

Comment: Replace "expectations" with "needs" in the abstract.

[Dorothy modified]

Comment: If we don't get this letter to the IETF before their March meeting, it is useless.

Motion by Dorothy Stanley:

Instruct the IEEE 802.11i chair to bring the letter, in submission 02/040, to the full IEEE 802.11 working group. This letter is to go from IEEE 802.11 to the IETF/IESG chair.

Second: Bernard Aboba

Vote: 15-0-5 passes

Chair: Are there any new agenda items?

[None]

Chair: The editor should have a new draft on server tomorrow. We could meet tomorrow morning to discuss the new draft.

Chair: Any objection to recessing until 9:00am tomorrow morning?

Hearing none, we are recessed until 9:00am tomorrow.

Wednesday, January 23, 2002

9:01 am

Chair: I talked to Stuart Kerry regarding the motions we plan to make. The first is to make all TGi drafts publicly available. Stuart said he would rule that out of order.

Comment: Stuart's position is that he does not want it reviewed by outside parties.

Chair: He is supporting the IEEE rules. I could still bring it up. Options are to add the draft as a submission on the status TGi section on the web site.

Comment: I see that as necessary.

Comment: If ruled out of order, can we override him?

Chair: Yes

Comment: We're not asking him to change rule - he can't. We're asking for an exception in this case since it is important to have outside review. We should talk to Stuart more so that he knows what our intent is. We are not asking him to change the rule - we know he can't.

Comment: Does he know of some other way to do this?

Chair: I prefer not to wait to Friday. Jesse and I will talk to Stuart before Friday.

Comment: Ask Stuart to find a solution to the problem. We need public review.

Comment: Is there a problem with creating a tutorial?

Comment: There is not sufficient technical detail.

Chair: Is the group okay with Jesse and I talking to Stuart, and then bringing it up on Friday based on what Stuart says?

Jesse: If we have the discussion, we will know if this is amenable to him.

Comment: P1363 does not make their work publicly available. As an alternative, we can get permission to share with specific cryptographic groups.

Comment: We could organize a presentation at the Santa Barbara Crypto event. Documents are available to all who attend.

Chair: I mentioned to Stuart that the letter to IESG may take some time.

Editor: Draft 1.8 is on Venus in the "To_Doc_Keeper" folder.

Chair: I expect a decision tomorrow if we should go to Letter Ballot.

Editor: In order to send the draft to Letter Ballot, we need a motion to advance it to version 2.0, and remove revision marks.

Chair: After our vote, the draft needs to be on the server 4 hours before the 802.11 vote.

Comment: Can we send version 1.8 out for Letter Ballot?

Editor: We need to remove revision marks and spell check.

Chair: Are we ready to vote to go to Letter Ballot now?

Comment: I think we need more time to review.

Comment: The draft could use some figures to walk through the authentication protocol. This would be great for an implementer.

Editor: Let's have that discussion after the review of the draft.

Comment: I'm going to have to do this for my company anyway. I could provide this.

Chair: Please review draft 1.8 so that we can vote on it tomorrow.

Presentation: John Edney, doc 02/109r0 "Temporary MAC Addresses for Anonymity"

John: The goal is to separate MAC address from the identity of the station.

Comment: Would it make sense to have a DHCP server pass out these addresses as well?

John: Yes, we may need to invent something

Comment: IAPP uses an IETF protocol to distribute MAC addresses.

Comment: We're not out of capability bits, it may be better to use one of those. ACLs will no longer be feasible. If MAC addresses are no longer unique, you give up control.

Comment: There are issues with legacy systems & ACLs

Comment: The initial DHCP work used a similar system of client selecting a random address. It did not scale.

Comment: This may be an issues using VPN's.

John: Some VPN's may rely on the uniqueness of the MAC address. This may break that.

Comment: If the broadcast key is not updated, we have trouble.

Comment: Jamming/forging beacons could force everyone to use their static MAC address.

Chair: What is the usefulness? You could track the random address just as easily.

John: You choose a new MAC address every time you Associate.

John: If the MAC address only needs to be unique in a BSS, then the problem is simpler.

Comment: That is all that is needed.

Comment: Would this cause a problem with the authentication server?

John: This would provide an anonymous ID only to the AP. We would still use the static MAC for identity to the authentication server.

Comment: Can the AP provide address translation to the actual MAC address?

John: There is an issue when roaming.

Comment: That could be solved with IAPP.

Recessed: until 8:00 am Thursday

Thursday January 24, 2002

8:00 am - Joint session with TGe

Meeting called to order at 8:17am

[meeting chaired by TGi chair David Halasz]

Chair: The purpose of this meeting is to create a forum to discuss issues presented between the TGi and TGe groups. This is meant to be an open discussion.

Discussion:

Comment: One and a half years ago, IE space between TGi & TGe was allocated. TGe is encroaching on TGi space. TGe/i should move their IE space so we don't overlap. How are we to move forward?

Chair: We should catalog the current issues and start discussion between editors and have them report back to their respective groups.

Comment: QoS Traffic Class. There are issues with Burst ACK's within Traffic Classes and replay attacks. How do we deal with key management for side-stream traffic without going to manual configuration?

Comment: For QoS, we need to deal with the secure fast re-authentication. A mutual authentication with AP is needed when roaming. Whatever solution we come up with, it must be independent of infrastructure mode.

Chair: There has been a lot of work done on re-keying. Is there justification for follow-up?

Comment: The Microsoft document on re-keying would be sufficient if secure.

Comment: There is an issue with fast authentication when roaming. It is nearly impossible to perform a fast re-authentication without it being noticeable to the user. We should adopt a model used with cell phones - associated with 3 towers at once. Perform some background work with new AP before making the switch.

Chair: The "make before break" concept has been discussed before. Currently, you cannot do that due to Association rules.

Comment: The reason this hasn't been looked at up until now is because of the Association rule. Perform a "pre-Assoc" to not violate the rule.

Comment: There is currently a proposal in TGe (doc 02/066r2) where stations are capable of becoming an AP. TGi needs to be involved with that effort to see if there are security issues related to this.

Comment: The security issues with this seem to be great. The AP gets to see all traffic in plaintext. An attacker will claim to be new AP. We will lose all security.

Comment: IE's 32, 35 are being used by both TGe & TGi.

Chair: Jesse brought that up as the first issue. Can we solve this right now?

Jesse: No, because of coordination needed with other task groups.

Chair: Since we are in a joint TGe/i meeting, let's fix it right now.

Comment: At the WG Closing plenary, we should ask the WG to assign a block for each TG.

Motion: by Michael Fischer

Move that blocks of Element ID Codes, Status Codes, and Reason Codes be allocated to each Task Group whose PAR includes MAC changes to allow non-conflicting code assignments working in parallel. Upon completion of any PAR, allocated but unassigned codes will revert to being reserved.

Second: Jesse Walker

Discussion:

Comment: As the motion stands, it is unilateral between the two task groups. I don't think we have the power to do that.

Comment: Shouldn't we state who would make these allocations?

Chair: It is assumed to be the editors. You are welcome to make an amendment.

Comment: I would like to amend the motion (text drafted).

PoI: Can I ask if adding the IE's is technical or editorial?

Comment: Editorial now because we are not in Sponsor Ballot process. This reduces probability of editorial becoming a technical one.

Motion to Amend: by Alan Chickinsky

Allocation be done by WG chair and this motion if passed be taken on behalf of this joint TGi/TGe group to the Full WG for approval.

Second: Jesse Walker

Vote on motion to amend: 45-1-6 Passes

Comment: The motion indicates that these are going to be block assignments. We did this initially and we are running out. Maybe it would be better to allocate codes as needed and have the list maintained by a single source (e.g. Harry).

Comment: More blocks can be allocated to each TG later. We are not restricted to a single block.

Comment: We are spending too much time on discussing this.

Call the question: Duncan

Second: Michael Fischer

No objection

New Main Motion:

Move that blocks of Element ID Codes, Status Codes, and Reason Codes be allocated to each Task Group whose PAR includes MAC changes to allow non-conflicting code assignments working in parallel. Upon completion of any PAR, allocated but unassigned codes will revert to being reserved. Allocation be done by WG chair and this motion if passed be taken on behalf of this joint TGi/TGe group to the Full WG for approval.

Moved by: Michael Fischer

Second: Jesse Walker

Vote: 48-0-3 Passes

Chair: I will meet with the TGi/TGe editors to prepare a motion for the Full WG mtg.

Chair: Any further discussion. None

Chair: Next agenda item is the issue with Burst Acknowledgements.

Comment: In Austin, Traffic Categories (TC) were discussed. Replay prevention would work as long a sequence number was allocated per TC. Then we learned about Burst ACK's. Retransmission of an older sequence number would be seen as a replay attack. A sequence number window may resolve this. What is an acceptable size for the window?

Comment: Since Burst Acks are at such a low level of the MAC, why not perform security check after the full burst is received?

Comment: Skipped sequence numbers will be buffered until previous (missing) numbers are received.

Comment: We are comfortable with this then.

Comment: Is Burst mode intended to go into legacy HW?

Comment: This is dependent upon legacy HW being capable of recognizing new frame types.

Comment: TKIP is dependent on assumption that it can be handled by legacy HW. Burst mode must be implemented below security.

Comment: The Burst ACK mechanism was proposed to resolve issues with previous Delayed ACK mechanism.

Comment: There is a mechanism in place for legacy HW that would violate security.

Comment: Logically, QoS would lie under Security. This is an implementation issue.

Comment: Burst Acks, as originally defined, covered 16 MSDU's. Has that changed?

Comment: A change was made to support up to 8 MSDU's which results in a maximum of 128 MPDU's, or an option to support up to 128 unfragmented MSDU's.

Comment: Within reassembly, the MSDU's are in order. Out of order fragments will be rejected. I would like to see a picture showing the structure within the MAC.

Comment: Agree. The diagram is needed. It needs to be a coordinated effort between all groups. An ad-hoc group between MAC TG's would appropriate.

Comment: These Acks are at the MSDU, where others are at MPDU level. I now have more concerns regarding security.

Comment: The Acks are logically still at the MPDU level.

Side-stream Discussion:

Comment: Side-stream was originally treated like ad-hoc. We learned that the AP is to play a role. We would like an overview from TGe on side-stream communications.

Chair: Any volunteers?

Comment: Term "Side-stream" does not appear in TGe draft. If both stations are associated to the same AP, why is there a security concern?

Comment: Side-stream overview: The AP governs all side-stream traffic. The STA indicates to the AP that it is capable of side-stream communications. The AP can choose to not allow the side-stream channel to occur.

Comment: Are broadcasts allowed in side-stream traffic?

Comment: No, unicast only.

Comment: Prohibiting the use for MC/BC is quite useful. The keys are established between the stations and AP. We need a pair-wise key between the stations involved in the side-stream traffic. Perhaps the AP could distribute the keys. Perhaps an ad hoc group could be formed to discuss this issue.

Chair: Any further issues?

[none]

Chair: Any objection to recessing until 10:30am and the people interested in forming an ad hoc to discuss these issues meet here?

[No objections.]

Recessed at 9:33am

10:30am - Joint TGi/TGf Meeting

Called to order at 10:34am

[meeting chaired by TGi chair David Halasz]

Chair: There is no formal agenda. Items to discuss are:

- Update from TGf
- Presentation from Jesse Walker

Are there any further presentations?

[none]

Open up to general discussion.

TGf update - Dave Bagby

TGf is close to completing its work for the week. Two drafts posted this morning; V2.4 with revision marks, V3.0 without. SLP is no longer part of draft. We have completed processing of the Letter Ballot comments.

Presentation: Jesse Walker - doc 02/113 Fast Roaming Observations

Issues:

- Updating bridges

- Association to new AP without disassociating with old AP
- Move QoS from old to new AP
- Use of TGi for moving key material from old to new AP.

Comment: Most of the work needs to be done in TGi, and this is not being done.

Comment: There is a new authenticator element in the re-association request. New and old AP's utilize an authentication server to establish a secure connection between each other.

Comment: There are issues with sharing the same key material between n AP's. This increases the chance of a key being compromised. How are new keys obtained? Do keys live forever?

Comment: To guarantee liveness, either timestamps or nonces are required.

Comment: Is more authentication is needed between the old AP, new AP, and the station that roams?

Comment: "A Different Architecture" slide: Shouldn't there be a separate key per AP per Station?

Jesse: No, this is only between the AP and the AS.

Comment: A new Key Sharing protocol introduced.

Comment: I thought the idea was to avoid going back to the AS.

Jesse: The operations we tried to stay away from are those that impose a high burden on the AS, like TLS.

Comment: We will have a real issue with ensuring liveness if we rely on TGf.

TGf has chosen to use IPSec which is going to increase the price of AP's. TGf is using the AS for IPSec, which is going to require a lot of analysis.

Summary: TGf should not compromise its own architecture just to accommodate TGi.

Dave Bagby: TGf did not do all this only for TGi. We needed a general mechanism for transferring context for **any** TG, not just TGi.

Jesse: How much security do you need?

Dave Bagby: It is not TGi's charter to be security for all things.

Jesse: I'm not sure what TGi is going to do about the key passing issue. This is not in TGf's charter. Relying on IPSec for protection of key material is inappropriate.

Comment: Is the issue of securing the channel between AP's separate from the need for securing the information for TGi?

Jesse: We don't know what people are going to invent in the future. The original goal is to provide Wired Equivalent Privacy. Until we have a need to secure the backend, do we want to address it?

Comment: If an AP/Station key is compromised on the old AP, then it will be compromised on the new AP and will be passed along.

Jesse: Yes, that is one of the main issues I'm concerned with.

Comment: It is a TGi issue, not TGf. How do I perform a key renewal between STA & AP?

Jesse: I believe what we are doing now is making it a TGf issue, but it shouldn't be.

Comment: Two approaches: TGi has a need to transfer security information for roaming. TGf needs to solve this for other purposes. What do the powers say about this? TGf says we need security and that is TGi's job.

Dave Bagby: From TGf's standpoint, IAPP shall be "reasonably" secure. Letter Ballot responses were that security was not reasonable. The new draft provides better security. TGf does not want to look at the contents of what is in the container, just provide a secure channel for transferring it.

Chair: Our PAR says MAC enhancements. TGi does not have to solve all problems just because they relate to security. I'm not sure if all things being discussed fall with our PAR. Having this joint meeting is useful to determine if these issues are within our scope. The home for the solution may be TGi, TGf, some outside group, new TG.

Comment: What is really needed is a TGf meeting where all TGi experts show up.

Dave Bagby: I encourage some of those people to attend TGf meetings. We would like to have them review our latest draft.

Niels: Protocols for distributing keys among old AP, new AP, Authentication Server and Station are **very** difficult to implement. The chances of getting it right are very low. I worry about several WG's trying to solve a piece of the puzzle. There will not be enough quality review.

Comment: One of the goals of TGf is to avoid having to re-authenticate. We want to make sure we can trust the information from the old AP. Is that accurate?

Dave Bagby: Yes. We are trusting the information from the old AP. We don't know if it is valid because we don't know what is in the container.

Greg Chesson: question for Niels: Are there examples like Jesse presented that have been broken after being in place for 10 years?

Niels: Yes

Greg: Where are the hard parts?

Niels: The inability to understand the trust relationship.

Greg: The more parties, the more difficult the problem?

Niels: Yes - exponential.

Comment: Is a secure back channel needed? Its purpose is to secure the fast handoff. A back channel would most likely be at layer 2. A wire is most likely trusted. A user could install dedicated wiring between AP's, or have each AP use VPN.

Dave Bagby: We are being driven by the Letter Ballot comments. It became clear when reading the comments this is what we needed to do.

Comment: One of the applications that can really benefit from fast handoffs is VoIP, but these are not fast enough for this purpose.

Comment: Read the new TGf draft. Caching is allowed between AP's. If that is not fast enough, forget it.

Chair: Any further discussion?

[None]

Chair: TGi's next meeting will be at 1:00pm today. The major issue is to vote on going to Letter Ballot. The new draft 2.0 will need to be on the server by 4:30pm to be eligible for a vote to the WG on Friday morning.

Chair: Any objections to recess?

[None]

Recessed at 11:50 until 1:00pm

1:00pm – TGi Session

Called to order at 1:01pm

Chair: Agenda items:

- Decision to go to Letter Ballot.
- John Edney has an editorial change he would like to make.

Jesse: The term ESN is used to refer to Enhanced Security Network. I suggest that we change it to Robust Security Network (RSN). This could be done by the 4:30 deadline if there is not too much discussion.

Chair: Is there any objection to editorial change?

[None]

Chair: No motion necessary - editor has agreed.

Comment: Are we planning on using the terms RSTA and RAP, similar to the terms QSTA and QAP used in TGe?

Chair: In order to go to Letter Ballot we need draft 2.0 on the server by 4:30.

Discussion: Should we go to Letter Ballot?

Chair: There are no state diagrams, but 11b did not have state diagrams before going to Letter Ballot.

POI: When will the chair discuss the conversation the editor and chair had with Stuart?

Chair: After vote on going to Letter Ballot

Chair: There will be missing and incorrect items in the draft. We want to go to Letter Ballot before we spend too much more time on the path that we are currently going to make sure it is the correct one. This also forces people to take a serious look at the draft.

Open for discussion:

Against: There are areas that do not hang together. For example section 8.2.1.2 shared key.

Chair: If we don't go to Letter Ballot, what type of issues will we be focusing on? Probably larger issues. Going to Letter Ballot forces us to clean these up.

Against: There is enough incoherence that we risk alienating our reviewer committee.

Against: We know it doesn't have to be perfect. When is it not repulsive? It has to reach a certain level. I'm highly confident we could get there by the next meeting.

Chair: What will happen between now and the next meeting is not cleaning up the text. There will be other issues/motions. Editorial and technical changes will be added.

For: The benefit is that it can educate the other members in the WG on recent changes. The negative aspect is if it wastes their time. They will be angry.

Comment: How would we go forward regardless of Letter Ballot? We should have a moratorium of new items going into the draft until after the Letter Ballot.

Chair: We should try to clean-up what we have before adding more features. If we go too long, I do have the right to determine when things are out of scope - we need to make progress. Our PAR has a lifetime.

Against: We need to prevent adding new items. The draft is not good at informing people. I am unable to write an introduction based on the current text.

Comment: It is urgent to fix WEP for WECA. Is TKIP good enough?

Comment: No.

Comment: It would be interesting to have someone fresh read this.

Comment: They would be totally confused.

Comment: Can we make a motion that we will not add any new proposals and only clarify the current draft for the next meeting?

Chair: We don't need a motion; I can adjust the agenda accordingly. We should look to go to Letter Ballot at the beginning of the next meeting.

Comment: This is the first time I've reviewed the draft. There are missing and implicit parts. I find it hard to read.

Comment: What is not ready with TKIP?

Comment: A few technical details are missing that will lead to interoperability problems.

Comment: There is a tool available if we don't go to Letter Ballot. Schedule an editing meeting before the next IEEE meeting.

Chair: We have had these types of meetings in the past.

Editor: I would support going to Letter Ballot at the beginning of next meeting. By definition, when this meeting ends, we will add no more text. Re: TKIP, key mixing and MIC are there, however all other components have been pasted together - there will be inconsistencies due to haste. An example of the piecemeal is that nowhere do we define where we get the key for the MIC.

Comment: Can you end it now, procedurally, with these issues?

Chair: Yes.

Comment: We will be doing a disservice. The rest of the WG may say we're going in the wrong direction.

Editor: I'm not in favor of holding the draft from Letter Ballot until all technical issues have been resolved. However, sending out a draft that our reviewing committee cannot comprehend is not a good idea.

For: It would be good to get feedback to see if we are on the right path.

Comment: Is six weeks enough time to get the document in good shape?

Editor: I don't know. 20% of the document needs to be modified.

Comment: MIC is there; per packet re-key is there - but not reviewed. They are there as informative, normative.

Comment: It will require a number of us getting together.

Comment: If we can't do it in six weeks, something is very wrong

Comment: If the major technical issues are complete, is there much value in involving the rest of the group?

Comment: Is the Letter Ballot the best venue for that?

Chair: The order is Letter Ballot, re-circulation, Sponsor Ballot. By the time we get to Sponsor Ballot, all technical issues should be resolved.

Comment: Is there some mechanism other than Letter Ballot to get feedback without putting that much burden on the WG?

Against: The "cake is not baked" enough to go to Letter Ballot without it going flat. We have made a lot of progress.

Comment: I don't think we'll get any feedback that we don't already know. Going to Letter Ballot will slow us down due to comment resolution.

Comment: If we don't go to Letter Ballot, how will this affect WECA?.

Comment: We will look at the current draft to plan.

Comment: Maybe the best way to get a feel of Task Group is to take a straw poll

Straw Poll: Should we attempt to go to Letter Ballot this session?

Vote: 15-34-8

Comment: Are there any preparations that need to be done now in preparation for going to Letter Ballot at the next session?

Chair: We have to take care of editorial changes. We also need to setup meetings and conference calls at end of this session.

Comment: Tim has prepared doc 02/114 as an overview.

Comment: a new document is being prepared describing the frame format for counter mode.

Presentation: Rene Struik - doc 02/042r0 RC4 Stream Cipher Variant and their use in IEEE P802.11 WLAN

Comment: With 4 bytes of IV, aren't there 4 billion IV's?

Rene: Yes, but this was based on a theoretical value.

Rene: Only 8.4% percent overhead.

Comment: The main reason we came up with TKIP is because both the cipher and the key setup are being done in hardware.

Rene: This information was unavailable.

Chair: Agenda discussion

There are two remaining sessions to figure what we need to do to get to Letter Ballot. Are there any technical motions to clarify text?

[None]

Chair: Is it worthwhile to get together in an ad-hoc fashion to discuss how we get to Letter Ballot?

Comment: Yes

Chair: Are there any objections to recessing until the 3:30pm session and have ad hoc meetings during this time?

[None]

Recessed at 2:30.

3:30pm TGi Session

Called to order at 3:50pm

Chair: Tim Moore has a presentation going through an example.

Comment: Dorothy has a presentation on frame format mapping for Counter Mode.

Chair: Does it have something to do with clarifying text that is already in the draft?

Comment: No. It clarifies the presentation from Russ.

Editor: This is not text to replace OCB.

Chair: I don't see how this will help us go to Letter Ballot.

Chair: We need to discuss possible interim meeting times and locations.

Comment: Larry Green has offered the use of his facility in Santa Barbara.

Chair: would one day be sufficient?

Comment: 2 or 3 days would be needed. There is enough work to warrant this amount of time.

Comment: Russ could get us a room at the RSA conference for half a day.

Comment: Would any votes taken at the meeting be binding?

Chair: The meetings are mostly for editorial changes.

Comment: Any decisions that are made need to be ratified at the next session.

Comment: If the Letter Ballot is approved at the beginning of the next session, what will we do for the remainder?

Chair: There will be demand for new motions.

Straw Poll: Should we have an editing ad hoc meeting in Santa Barbara?

Vote: 20-0-8

Comment: Can we sustain two meetings within six weeks?

Consensus is no.

Chair: The meeting will take place in Santa Barbara on February 11th & 12th. The Results of meeting will not be valid until approved at the St Louis meeting.

In order to get a count on the size of the facility needed, Larry Green asked for a count of the number of people that plan to attend. The following question was posed to the TG:

“I intend to attend the TG Ad Hoc meeting in Santa Barbara being proposed on February 11th and 12th, 2002.”

Count: 15

Chair: I will send out a message stating details of meeting on the website.

Comment: Please post something on the reflector as well.

Motion by Greg Chesson: To hold an Ad Hoc meeting in Santa Barbara on February 11th & 12th hosted by CMC Corp by Larry Green.

Second: Jesse Walker

Vote: 12-0-3 Passes

Presentation by Tim Moore - doc 02/114r1 TGi Security Overview

Comment: When reading the document, a warning that in some places we say to authenticate then associate, and others to associate then authenticate.

Comment: Put a section in about sending 802.1x unencrypted.

Editor: Slide 7 - this would make good informative text in an Annex.

Comment: Put the informative text in as an Annex for Letter Ballot, and then take it out if someone objects.

Comment: If you send the master key to the AP, doesn't that mean the AP can impersonate the STA?

Tim: You send the master session key, not master key.

Tim: At Microsoft, 2 to 3 hops for authentication takes 800ms. Fast reconnect takes about 100ms.

Comment: Is the master key derived from the certificate?

Tim: Yes, using a hash with a random value.

Tim: There is no liveness for nonce - this is a weakness.

Tim: The draft currently does not state how the temporal key for TKIP is generated.

Comment: Also, the draft doesn't state where the keys live.

Comment: To go from the transient session key to the temporal key, do you simply truncate?

Tim: Yes.

Comment: Is the IV needed?

Tim: Yes.

Comment: In what cipher suite is the ICV used?

Tim: None - it is used in TLS. We basically need a nonce for TLS.

Comment: What does the draft say?

Tim: It doesn't.

Comment: Slide 19; what are APIV and PAIV?

Tim: PAIV is the peer to authenticator initialization vector. APIV is the authenticator to peer initialization vector.

Comment: The method used to derive the temporal key should not allow cipher text encrypted with an older key to be decrypted if a newer key is compromised.

Tim: There is not a MIB object to indicate when the RX IV space is about to be exhausted. There is one for TX.

Comment: Could splitting the 256bit key be used in Counter Mode as well?

Comment: There is a performance reason that we don't do that.

Comment: Slide 25 - Where does the IV come from?

Tim: It is not defined in the draft.

Tim: Some people may make the mistake of using the TKIP method for IV instead of AES.

Comment: Talking to Rene, we may want to make minor changes to the key mixing.

Comment: Remember, some implementations can only do 1 bit rotates.

Comment: What is the speed goal for fast handoff?

Tim: About 20ms. If updating switching tables takes more then 20ms, we're out of luck.

Chair: Any objections to adjourning for the week?

Comment: If we still have time, I would like to hear Dorothy's presentation.

Chair: Will that help us get to Letter Ballot? Or just bring up new issues?

Straw Poll: Who would like to continue with the session and see Dorothy's presentation?

Vote: 18-4-11

Comment: Will there be any motions from the presentation?

Comment: No.

Chair: Any objections to adjourning and then continuing in an ad hoc session?

[None]

TGi Session adjourned at 5:33pm.