IEEE P802.11
Wireless LANs

Tentative Minutes of the IEEE P802.11 Full Working Group

November 11 - 15, 2002

Hyatt Regency Kauai, Kauai, Hawaii

Joint 802.11 / 802.15 Opening Plenary: Monday, November 11, 2002

1.1. Introduction

1.1.1. Meeting called to order by Stuart J Kerry and Bob Heile at 13:00 The agenda of the 76th session of 802.11 is in doc.: IEEE 11-02-628r4, This session is including 802.15, 802.18 RREG TAG and 802.19 Coexistence TAG.

1.1.2. Introduction of officers.

1.1.3. Secretary – Tim Godfrey

1.1.4. Straw Poll: New Members at this meeting – 22

1.1.5. There are 354 people in the room.

1.2. Announcements

1.2.1. Review of LMSC Policies and Procedures

1.2.1.1. Document 00/278R3 presented by Al Petrick

1.2.1.2. Rules regarding registration, fees, and recording are reviewed.

1.2.1.3. Media and press : only chairs and vice chairs can give statements to media and analysts.

1.2.1.4. Electronic Attendance. – The procedure is reviewed.

1.2.1.5. If the e-attendance server fails, we will revert to as set of 4 books (for the 4 tracks) for the rest of the week.

1.2.1.6. There is a new participant orientation in document 01/462r9.

1.2.1.7. The rules for contacts and attendance are reviewed.

1.2.1.8. The rules for gaining voting rights are reviewed, and meeting participation.

1.2.1.9. The rules for session participation for voting members are reviewed

1.2.1.10. IEEE Patent Policy review- if anyone knows of relevant patents, they must notify the WG chairs. More details in the Standards Board Bylaws.

1.2.1.11. Members represent themselves as individual members, and discussions of pricing are prohibited for anti-trust reasons.

1.2.1.12. All documents become copyrighted by IEEE.

1.2.2. Review of Pluto and Wireless Network.

1.2.2.1. Sign attendance, request document number.

1.2.2.2. Attendees that didn't get the attendance list from Monterey, see Al Petrick.

1.2.2.3. Voting Tokens will be distributed by Tomorrow.

1.2.2.4. Voters may confirm attendance by sending an email message to apetrick@icefyre.com. Subject: Kauai-Lastname-Firstname-attended>

1.2.2.5. Thanks to AT&T for setting up the new server,

1.2.2.6. Thanks to John Barr and IBM for providing the new server at cost.

1.3. Approval of Agenda

1.3.1.1. Any changes or modifications to the agenda?

1.3.1.1.1. None

1.3.1.2. The agenda is approved by unanimous consent.

1.4. Approve the minutes of Monterey.

1.4.1. Approved without objections

1.5. Review of Interim Meetings

1.5.1. Next Interim Ft Lauderdale Jan 13-17, hosted by Motorola. Marina Marriott. Announcement and links posted later this week.

1.5.1.1. Preregistration will be $350, on site $400

1.5.2. May Interim in Singapore hosted by Cisco.

1.5.3. Looking for September 2003, east coast. New Orleans or Hilton Head.

1.5.4. January 2004 – Wireless Interim. Vancouver BC, Vancouver Hotel.

1.6. Financials for 802.11 / 802.15

1.6.1. Document 802.15 455

1.6.1.1. There was a $53K meeting surplus. We had an increase in attendance by 30%. Variable expenses only went up 18%. We paid for less people for meals, and resulted

1.6.1.2. Current balance $55K

1.6.1.3. These funds will be used. We will report on a software project.

1.6.1.4. This meeting is projected to lose $40K. There are cutbacks in service.

1.6.1.5. There is a proposal to increase meeting fees to $300 / $350

1.7. Software Application Project

1.7.1. Al Petrick. Document to be put on the server

1.7.2. We are trying to upgrade servers, attendance, database, voting, etc. The group is so much larger.

1.7.3. In September, both WGs voted to upgrade our network servers, and engage a 3rd party software developer to develop an e-attendance application. It will evolve to support letter ballot voting also.

1.7.4. It will include 802.11, 15, 18, and 19 initially.

1.7.5. Proposing to generate RFQs this week, for application development, and network support.

1.7.6. Software development starting December, and test in March Plenary.

1.7.7. Trying to keep application NRE to under $20K.

1.7.8. Discussion

1.7.8.1. Is there any canned software? We want to do exactly what we want from the start.

1.8. Monday SEC Review

1.8.1. There will be a new IEEE policy regarding claiming conformance to draft standards.

1.8.2. There is a new rule that only 2 outstanding amendments. 802.11 already has 4 outstanding amendments.

1.8.3. We have become a very large organization – we are in two hotels.

1.8.4. A special session has been scheduled to discuss MBWA and 802.16e PARs..

1.8.5. The SEC is considering changing rules regarding gaining voting rights and losing them.

1.8.6. There is a session survey – Please complete this survey.

1.9. 802.11 Task Group Updates

1.9.1. TGe – John Fakatselis

1.9.1.1. TGe will continue with comment resolution this week. The intent will be to have a new draft for Letter Ballot this week.

1.9.1.2. The last letter ballot failed without 75% approval.

1.9.2. TGf – Dave Bagby

1.9.2.1. the sponsor ballot passed with 87% approval.

1.9.2.2. There are a few comments to be process this week.

1.9.2.3. Planning a recirculation by the end of the week.

1.9.3. TGg – Matthew Shoemake

1.9.3.1. The recirculation ballot passed with 86%. We had 140 comments that will be resolved this week.

1.9.3.2. There will be another recirculation ballot this week, so the draft will be updated.

1.9.3.3. Discussion

1.9.3.3.1. Is the forward to sponsor ballot after the January meeting? That is TBD – we will discuss.

1.9.4. TGh – Mika Kasslin

1.9.4.1. TGh had a recirculation before this meeting. It passed and there were 58 comments.

1.9.5. TGi – Dave Halasz

1.9.5.1. have been resolving comments on Letter Ballot of LB35. Plan to issue a new LB this week.

1.9.6. WNG – TK Tan

1.9.6.1. LB43 passed. Will resolve comments. If approved, we will have 802.11J. Looking for candidates for chair of 802.11J. There will be presentations and joint regulatory sessions.

1.9.7. RRM – Richard Paine

1.9.7.1. RRM will be working on the requirements and issues document, and a draft spec. The PAR has been turned in, but there are comments. Will be reviewing technical contributions. Looking for an editor. TGh and RRM have exchanged some slots, which are shown in the agenda R4.

1.9.8. HTSG – Jon Rosdahl.

1.9.8.1. HTSG will start tonight. Will try to create the PAR and 5 criteria this week.

1.9.9. 802.15.2 – Steve Shellhammer

1.9.9.1. Last letter ballot : 87% in 802.15, 81% in 802.11. Might see approval for sponsor ballot.

1.9.10. 802.15.3 – John Barr

1.9.10.1.1. LB12 Comment resolution

1.9.11.   **802.15.4**

        1.9.11.1.   Approval from first pass sponsor ballot

1.9.12.   **802.15.3 SG3a – Rick Roberts**

        1.9.12.1.   4 sessions on requirements and selection criteria. Expecting TG status in January. Downselection and Channel model sessions are planned. Consensus on multipath and path loss models. Special session at Tuesday 8:00am with 802.19 on coexistence with 802.11a. There will be a session on CFP and CFI

1.9.13.   **The chair notes that members should be aware to not leave computers unattended.**

1.9.14.   **Publicity Committee – Brian Mathews.**

        1.9.14.1.   One meeting Tuesday at 10:30. Will receive updates from WiFi alliance and WiMedia.

1.9.15.   **802.18 regulatory – Carl Stephenson**

        1.9.15.1.   Documents were prepared in Monterey for the FCC. They were approved and passed by SEC. There will be joint meetings, and prepare regulatory documents. Major issues of Part 15 review on OET document. Public consultation from AU and NZ. There is an NPRM on mm waves. Might be relevant to 802.16.

        1.9.15.2.   Issues with DFS and the radar band. The DOD wants a very low DFS threshold. This could cause problems with us at WRC in 2003.

1.9.16.   **802.19 – Jim Lansford**

        1.9.16.1.   Liaison works with other parts of IEEE. Trying to establish some sort of dialog with other wireless standards. Starting tomorrow morning with SG3A joint session. Will meet with high rate study group. First meeting on Wednesday.

        1.9.16.2.   Following up on ways of grading coexistence models for evaluation of proposals.

        1.9.16.3.   Will work on policies and procedures.

1.10. *Announcements*

1.10.1.   802.18 will have opening plenary from 3:30 to 5:00

1.11. *Adjourn until 2:30 for WG Plenaries.*

2. **802.11 Opening Session, Monday, November 11, 2002**

2.1. *Opening*

2.1.1. The meeting is called to order at 2:30 by Stuart J. Kerry.

2.1.2. The agenda is in R4, we will change to R5 for any changes in this session

2.1.3. Straw Poll of new attendees for 802.11. There are 26.

2.1.4. There are 317 people in the room.

2.2. *Announcements*

2.3. *IP Statements*

2.3.1. There are three IP statements. TGf, TGi, and TGe from Trapeze networks. The chair needs the original.

2.3.2. Are there any other IP statements?

        2.3.2.1.   None.

2.3.3. These will be posted to the IEEE database.

2.3.4. Is anyone not aware of the IP and

2.4. Voting status – document 402r10

2.4.1.1. There have been 7 letter ballots since the last letter ballot.

2.4.1.2. Based on 43, 44, and 45 (eligible voters from July 2002) were mandatory LBs

2.4.1.3. LB 46, 47,48, 49 were recirculation. Voter pools were based on the voters for those original letter ballot.

2.4.2. The operating rules state that failing to respond to 2 out of 3 LBs results in loss of voting rights.

2.4.3. LB 43-45 have causes 107 voters to lose their voting rights.

2.4.4. This list will be posted on the Bulletin board and reflector.

2.4.5. Listed members have the right to appeal. First go to the task group chairs, and confirm if your vote was missed.

2.4.6. Any appeals will be dealt with by the chair.

2.4.7. July – 390 voters. Now 280 voters, 95 nearly voters. Potential of 378 voters at this meeting.

2.4.8. We did make warnings to the member to be sure to pay attention to all the letter ballots.

2.5. Introduction of the chair and vice-chairs.

2.6. Announcements

2.6.1. Harry Worstelll extends the condolences of the entire WG to the chair , Stuart J. Kerry, who's father passed away recently.

2.7. Agenda

2.7.1. Review of the agenda

2.7.2. Discussion

2.7.2.1. If there are more Sponsor Ballots, we would like to be able to enter comments in the same Excel format that are used in 802.11.

2.7.2.2. We will try to work on this during the week.

2.7.2.3. We need to encourage IEEE to accept spreadsheets.

2.7.3. The agenda is approved without objection

2.8. Review of Minutes from Monterey

2.8.1. No discussion

2.8.2. The minutes are approved without objection

2.9. Documents

2.9.1. We are moving towards 700 documents.

2.9.2. Use the automated document numbering system.

2.10. Attendance

2.10.1. If the e-attendance system fails, we will revert to the attendance book.

2.11. Standard Roll-up – Terry Cole

2.11.1.   Document 486r4

2.11.2.   Includes 802.11-1999, a, b, d, and b-cor1.

2.11.3.   Compete at March 2003 Rev Com meeting.

2.11.4.   If we don't complete this we cannot create new amendments.

2.11.5.   We found the 802.11-1999 SDL files. They are updated as prescribed in the amendments.

2.11.6.   Editing work is almost complete. It will be turned into the IEEE balloting center as early as next week.

2.11.7.   We will have one new document that includes 5 currently. ISO / IEC will base a version of their document on this. It will be the first time they have approved 11b and 11d.

2.11.8.   We have to get through the sponsor ballot. We need meaningful comments in the scope of re-affirmation.

2.11.9.   TGs that are in progress must be careful to be sure they are writing against the 1999 or 2003 version

2.11.10.   We need to start thinking about the2005 version.

2.11.11.   There are 89 eligible voters for the re-affirmation ballot.

2.12. Operating Rules Update

2.12.1.   LB47 recirc on draft 331r4.

2.12.2.   Closes on Wednesday of this week.

2.12.3.   It looks like it is going to pass, few no-votes and comments.

2.12.4.   We expect to complete this during the week.

2.13. Vice-Chairs Roles

2.13.1.   The WG thanks Harry Worstell and Al Petrick for getting 7 letter ballots out during the time while Stuart was away.

2.14. New PARs

2.14.1.   This new standard will be 802.11J. It is not to be seen as a specific regional version for Japan. Regulatory environments do change and this is a result of that. PAR in 2-564

2.14.2.   RRM will become 802.11K. PAR in 2-337.

2.14.3.   The High Throughput SG will become 802.11L

2.14.4.   Comments on these PARs are due by 5:00PM Tuesday. Responses to comments are due by Wednesday.

2.14.5.   We are reviewing the 802.15.SG3A PAR.

2.14.5.1.   The Chair designate will be Bob Heile.

2.14.6.   Discussion

2.14.6.1.   The HTSG PAR is incorrectly indicated on the slide. The document keeper notes that the PARs should have explicit names.

2.14.6.2.   The reflector is still not working. Members are trying to send a link to the new PARs to the reflector.

        2.14.6.3.   Forward email to apetrick@icefyre.com to get onto the reflector until the problems are resolved.

    2.14.7.   802.16.2 10-66GHz PAR.

    2.14.8.   802.16D 2-11GHz Profiles

    2.14.9.   802.16E Mobile Wireless MAN Par

        2.14.9.1.   There will be a tutorial showing the differences between 802.16E and MBWA.

    2.14.10.   802.17 RPR PAR

    2.14.11.   802 SG MBWA

    2.14.12.   Survey 802/802.16 Session Preference Survey. It will be linked from our website. IEEE802.org/16/meetings/…

2.15. Recess until 3:30 for subgroups.

3. Wednesday, November 13, 2002

3.1. Opening

    3.1.1.   The meeting is called to order by Stuart J. Kerry at 10:30AM.

    3.1.2.   Review of the agenda. The new version is 02/628r5.

3.2. Announcements

    3.2.1.   The members are reminded to not open files on the server. Also, some documents have been in unacceptably formatted. Logos are not permitted on presentations.

    3.2.2.   Members are reminded that drafts do not get document numbers.

3.3. IP Statements

    3.3.1.   No new IP statements have been received since Monday.

3.4. Announcements

    3.4.1.   There will be a CAC meeting Thursday AM at 7:00AM.

    3.4.2.   Al Petrick will resolve problems with the attendance or

3.5. Review of the Agenda

    3.5.1.   The chair reviews the current agenda.

    3.5.2.   Is there any new business?

        3.5.2.1.   There was discussion of P1584 PAR approval – do we have a plan to put together a response? The deadline was yesterday, but comments can be taken to the SEC Friday by the WG Chair.

        3.5.2.2.   Need an agenda time to bring a motion to form the Sponsor Ballot Committee for the 802.11-2002 reaffirmation sponsor ballot.

        3.5.2.3.   Please clarify the PAR response? It is not a new PAR – it aligns us to the metric system and the ISO procedures. The WG chair will accept comments from anyone to take the SEC.

    3.5.3.   Any objections to adopting the agenda as revised?

        3.5.3.1.   None

    3.5.4.   the agenda is adopted without objection.

3.6. WNG Standing Committee

3.6.1. Proposal to amend 802.11a to address Japanese bands and rules – PAR and 5 Criteria. Document 759r0

    3.6.1.1. This will ultimately become an new task group and amendment of 802.11a.

    3.6.1.2. Japan allocated new bands at 4.9GHz and 5Ghz, which are not included in the current 802.11a standard.

    3.6.1.3. PAR in 564r1, 5 criteria in 565r0

    3.6.1.4. The PAR and 5 criteria were sent to a 15 day LB. Results. Letter Ballot passed with a vote of 251: 3 : 10

    3.6.1.5. The documents have been forwarded to the 802 SEC.

    3.6.1.6. Comments have been collected in 02/668r3. They have been resolved in the WNG sessions.

    3.6.1.7. We still would like to convert the 3 No votes to yes. It's not mandatory, but we will approach those voters to change, based on the comment resolution responses.

    3.6.1.8. The revised documents must be submitted to the SEC, since wording has been changed. A re-confirmation of the revised comments is necessary.

    3.6.1.9. Motion: Move that the WG approve the revised PAR (11-02-564r3) and 5 criteria (11-02-565r1) and forward them, with comment resolution responses (11-02-668r3) to the SEC for approval on Friday, Nov 15, 2002.

        3.6.1.9.1. Moved Bruce Kraemer, on behalf of WNG.

        3.6.1.9.2. Motion ID 363

        3.6.1.9.3. Vote: Passes 111 : 1 : 10

3.7. RRM Study Group

3.7.1. RRM is presently a Study Group, expecting to be a task group by the end of the week.

    3.7.1.1. Motion: To hold weekly RRM SG teleconferences starting December 4th, 2002, until the first RRM Task Group Meeting.

        3.7.1.1.1. Moved Richard Paine on behalf of RRM SG.

        3.7.1.1.2. Motion ID 364

        3.7.1.1.3. Discussion

            3.7.1.1.3.1. None

        3.7.1.1.4. Vote: Passes 101 : 0 : 13

    3.7.1.2. Motion: Extend the RRM SG until the first RRM task group meeting and request SEC approval.

        3.7.1.2.1. Moved Richard Paine on behalf of RRM SG.

        3.7.1.2.2. Motion ID 365

        3.7.1.2.3. Discussion

            3.7.1.2.3.1. Is this infinite extension if they are not approved? Is there a time limit? The WG chair states that if the SEC does not approve the TG and extends the SG, it is until the March 2003 Plenary.

        3.7.1.2.4. Vote: Passes 107 : 0 : 5

    3.7.1.3. Motion: To accept the PAR revision 337r10. The scope in 337r11 is now; "This project will define Radio Resource Measurement enhancements to provide mechanisms to higher layers for radio and network measurements."

        3.7.1.3.1. Moved Richard Paine on behalf of RRM SG.

        3.7.1.3.2. Motion ID 366

        3.7.1.3.3. Discussion

3.7.1.3.3.1.   Motion to amend: (Peter E/ Ivan R) amended with no objection

3.7.1.4.   Motion as amended: To accept the PAR revision 337r11. The scope in 337r11 shall be; "This project will define Radio Resource Measurement enhancements to provide mechanisms to higher layers for radio and network measurements."

3.7.1.4.1.   Vote: Passes 110: 0 : 13

3.8. High Throughput SG

3.8.1.1.   Move to extend the HT Study Group Charter until the end of the March 2003 Plenary for the purpose of creating the PAR and Criteria Response and request the WG seek SEC approval.

3.8.1.1.1.   Moved Jon Rosdahl

3.8.1.1.2.   Second Collin L

3.8.1.1.3.   Motion ID 367

3.8.1.1.4.   Discussion

3.8.1.1.4.1.   Friendly Amendment: add "HT" before Study Group

3.8.1.1.5.   Vote: Passes 138 : 0 : 0

3.8.1.2.   Announcement

3.8.1.2.1.   HTSG will meet Thursday at 7:00PM. We will try to complete the PAR and 5 Criteria.

3.8.1.2.2.   WNG SC's final session will be tomorrow at 7:00 PM also.

3.9. WG Chairs Comment Working Group

3.9.1.   Presentation of document 0486r5.

3.9.1.1.   Motion: to form an IEEE 802.11 WG Chair's Sponsor Ballot resolution committee for 802.11-2003. Responsibilities are:
* Reviewing comments and proposed responses for the original ballot and any necessary recirculation ballots.
* Participation in teleconferences coordinated by the resolution committee chair.
* Contacting sponsor ballot voters as needed.
* Working with IEEE staff and the sponsor to complete the approval process.

3.9.1.1.1.   Moved Terry Cole

3.9.1.1.2.   Second Jon Rosdahl

3.9.1.1.3.   Motion ID 368

3.9.1.1.4.   Discussion

3.9.1.1.4.1.   None

3.9.1.1.5.   Vote: Passes 115 : 3 : 3

3.9.2.   Terry Cole is appointed as the chair of the WG Chairs Comment Working Group

3.10. New Business

3.10.1.   None

3.11. Recess at 11:38AM

4. Friday, November 15, 2002

4.1. Opening

4.1.1. The meeting is called to order at 8:00AM by Stuart J. Kerry.

4.2. Announcements

4.2.1. The agenda is still Rev 5.

4.2.2. The chair calls for any new IP statements from the membership.

4.2.3. Reminder to CAC members for upcoming teleconferences.

4.3. Agenda

4.3.1. The chair reviews the agenda.

4.3.2. Next meeting in Fort Lauderdale, Jan 13-17, 2003. Information will be on the 802.11 web site. Fort Lauderdale Marina Marriott.

4.3.3. Update to Old Business, we add an item to discuss the Rules document.

4.3.4. Any other additions to the agenda? None

4.3.5. Any objection to adopting the agenda as listed? None

4.3.6. The agenda is adopted without objection.

4.4. IP Statements

4.4.1. The chair has not received any new IP statements during the week.

4.5. Documentation Update

4.5.1. Look in the "Needs to be fixed" folder. Some were too bad that the formatting could not be fixed.

4.6. Task Group Reports

4.6.1. TGe – John Fakatselis

4.6.1.1. The group passed a number of motions during the week, and approved a letter ballot with a unanimous vote. The group believes the quality of the draft is sufficient.

4.6.1.2. A motion was passed to empower an interim meeting for comment resolution.

4.6.1.3. Objectives for next meeting: comment resolution, recirculation ballot.

4.6.1.4. Discussion

4.6.1.4.1. Why is an additional meeting needed? Also, the rules say that Task Group meetings are Ad-Hoc. We are anticipating a lot of comments. Teleconferences are not as efficient. We want to enable the possibility while at a plenary.

4.6.2. TGf – Dave Bagby

4.6.2.1. Closing Report in 658r0

4.6.2.2. Sponsor ballot passed with 86%

4.6.2.3. Comments and responses in 659r4

4.6.2.4. Draft 4.1 incorporates all resolutions

4.6.2.5. Waiting for a multicast address from IANA to plug into draft.

4.6.2.6. The IEEE editor needs a list of voting members at the time it was published, and the sponsor ballot pool.

4.6.2.7. TGf approved all the comment resolutions.

4.6.2.8. Asking the WG to approve the changes and start the recirculation ballot as scheduled.

4.6.2.9. Anticipated dates for Recirc is after Thanksgiving, expecting a 14 day ballot.

4.6.2.10. Minutes in 660.

4.6.2.11. Discussion

4.6.2.11.1. The WG chair has reviewed the comment resolutions, and the draft. Believes it should be forwarded to the IEEE.

4.6.2.11.2. The document 659 is in Access format, there is no standardized format. It will be moved into the regular document structure.

4.6.3. TGh – Mika Kasslin

4.6.3.1. Closing Report in 773r1

4.6.3.2. Comment resolution on LB48

4.6.3.3. Had joint meeting with 802.18, discussed harmonized standards.

4.6.3.4. LB36 76%, LB42 89%, LB48 94% approval. Number of comments has been decreasing.

4.6.3.5. There are 2 outstanding no-votes.

4.6.3.6. New draft D3.0 was approved unanimously.

4.6.3.7. In the process this week, No-voters changed their vote based on resolutions. Final approval is 97%.

4.6.3.8. Draft 3.0 is ready for Sponsor Ballot.

4.6.3.9. Objectives for January. Process sponsor ballot comments, update on WRC2003, discuss harmonized standard.

4.6.3.10. Discussion

4.6.3.10.1. The sponsor ballot is 30 days. Recirculation is 10 days. Need to coordinate with IEEE to properly schedule these over the holidays.

4.6.4. TGi – Dave Halasz

4.6.4.1. Closing Report in document 02/784

4.6.4.2. many motions to address LB35 comments

4.6.4.3. Voted to forward Draft 3.0 to Letter Ballot.

4.6.4.4. Next meeting objective – review LB results and comments.

4.6.4.5. There was an interim meeting in Herndon VA to resolve comment issues.

4.6.5. WNG SC – TK Tan

4.6.5.1. Closing report in 02/669r0

4.6.5.2. Resolved LB43 comments, modified PAR and 5C

4.6.5.3. Had presentations on MIMO, PAPR reduction, UWB channel model

4.6.5.4. Received updates from other bodies: ETSI/BRAN, MMAC, IAG,, WIG, Radio Regulatory TAG

4.6.5.5. Study Group discussions on VoIP Standardization and 802.11a range extension.

4.6.5.6. Objectives for January. Continue to receive updates from liaison organizations,

4.6.5.7. Discussion

4.6.5.7.1. The 802.11J PAR will be discussed at the SEC tonight

4.6.6. TGg – Matthew Shoemake

4.6.6.1. Closing report in document 782

4.6.6.2. During the week the TG was reviewing LB49. Every comment was resolved. Resolutions in 711r8.

4.6.6.3. Technical comments : 60 were accepted, 20 were countered with some alternate change. 58 comments were rejected.

4.6.6.4. LB49 was a recirculation ballot – Yes percentage was 86%.

4.6.6.5. LB41 and 49 did not meet the requirement for return rate due to the large pool of voters. There were a lot of "deadbeat" voters. LB41 received 65% return. LB49 received 72% return. This low return invalidated both ballots.

4.6.6.6.   It means we cannot issue a recirculation ballot. It will be a new 40 day letter ballot. The good news is that many voters are off the voting roster.

4.6.6.7.   Draft 4.3 is on the server now. The editor is verifying that all the motions are incorporated. When complete, it will become D5.0

4.6.6.8.   A motion to issue a new LB on draft 5.0 will be brought forward.

4.6.6.9.   The Secretary of TGG had to resign, and was made Secretary Emeritus of TGG.

4.6.6.10.   Objectives for January – review comments on LB for Draft 5.0

4.6.6.11.   TGg is working on a way to forward to Sponsor Ballot in January.

4.6.6.12.   Discussion

4.6.6.12.1.   The WG chair notes that a 40 day letter ballot is possible in the schedule. The ballot will run from Nov 29th To Dec 27th

4.6.7. Publicity SC – Brian Mathews.

4.6.7.1.   Closing report in document 725r0

4.6.7.2.   Document 756 on IEEE update

4.6.7.3.   WiMedia Update – similar to WiFi alliance but for 802.15. In Document 802.15 document 460.

4.6.7.4.   802news site is primary communications vehicle.

4.6.7.5.   Objectives for January – develop poster display for meetings in Singapore.

4.6.8. RRM SG – Richard Paine

4.6.8.1.   Document 783

4.6.8.2.   Had technical presentations, asked to extend the Study Group. Comment resolutions and PAR modifications.

4.6.8.3.   Will present PAR to SEC today and hopefully become Task Group.

4.6.8.4.   Next Meeting objectives – teleconferences, elect leader of TG if approved.

4.6.8.4.1.   Discussion

4.6.8.4.1.1.   The WG chair notes that only the leader, not all officers are initially elected.

4.6.9. High Throughput SG – Jon Rosdahl

4.6.9.1.   Report in document 666r0

4.6.9.2.   In the Mid Week, we extended the HTSG charter until march.

4.6.9.3.   Presentations on PAR and 5C.

4.6.9.4.   Look to complete PAR and 5C in January.

4.6.9.5.   Target schedule – request TG creation in March.

4.7. Liaison Reports

4.7.1. 802.1 - Halasz

4.7.1.1.   None

4.7.2. 802.15 - Seals

4.7.2.1.   None

4.7.3. 802.16 - Kasslin

4.7.3.1.   None

4.7.4. 802.18 – Carl Stephenson

4.7.4.1.   RR TAG Closing Report 802.18 doc 040

4.7.4.2.   Prepared filings for FCC

4.7.4.3.   Did not meet regulatory deadline for filing with Australia. There will be another opportunity for OFDM in 2.4GHz in a different class license.

4.7.4.4.   Drafted 802.18 operating rules

4.7.4.5.   Translated Japanese rules on OFDM.

4.7.4.6.   January objectives – hold joint meetings, prepare documents, rules for 802.18 for March Plenary.

4.7.4.7.

4.7.5. WiFi Alliance – Bill Carney

4.7.5.1.   Document 710r0

4.7.5.2.   WiFi alliance – to certify interoperability, and promote WiFi

4.7.5.3.   Setting goals for 4Q02. Renaming from WECA to WiFi alliance. New branding strategy was developed

4.7.5.4.   A new Capabilities Label will be introduced.

4.7.5.5.   Certification of 802.11a products, starting in 2 weeks in San Jose Lab.

4.7.5.6.   Will support WiFi Protected Access program. Based on 802.11i.

4.7.5.7.   WiFi Zone Pilot program – leveraging WiFi into public access.

4.7.5.8.   Active Technical Groups: Regulatory, 802.11a certification, Dual Band, 802.11e Certification, Security, Quality Testing, 802.11g certification.

4.7.5.9.   802.11a certification starting November 29th.

4.7.5.10.   The alliance has made IBSS optional.

4.7.5.11.   Dual Band also initiating November 29th. Two Types of AP – Switchable, or Simultaneous.

4.7.5.12.   WPA – interim security solution.

4.7.5.13.   Next meeting in December in San Diego.

4.7.5.14.   Discussion

4.7.5.14.1.   What is the reasoning behind WiFi alliance becoming a de-facto standardization organization? The board was considering the issues expressed by customers. The intent was to take a snapshot of the work in 802.11i and roll it out.

4.7.5.14.2.   Doesn't that create a requirement to remain with the existing version of the standard?

4.7.5.14.3.   The Actions of the WiFi alliance are not creating a defacto standards. They point to an IEEE document. It is a testament to how far WiFI alliance goes to work with IEEE. WiFi alliance is balancing market pressures with the IEEE process. Both organizations are trying to be flexible.

4.7.5.14.4.   WiFi is not creating a defacto standard. It is a subset of the draft developed this week. It is using the work done by this body.

4.7.5.14.5.   Another academic group wished to use a draft, and the IEEE cautioned them to not to claim conformance to draft.

4.7.5.14.6.   WiFi wants to point to a document that is not complete. What happens if the document changes? Is WiFi locking devices into the current draft? The intention is WiFi insure forward compatibility.

4.7.5.14.7.   Dave Bagby formally asks the WiFi Alliance to bring back an answer to the previous question.

4.7.5.14.8.   Applauds the group for addressing the security issue.

4.7.5.14.9.   The IEEE has clear statements and rules to accessing information. Will WiFi Alliance be passing any information back to 802.11?

4.7.5.14.10.   The WiFi alliance takes it as an action item to answer that question for 802.11.

4.8.   Special Orders - Motions

4.8.1. TGe Motions

4.8.1.1. For 802.11 WG to submit Draft version 4.0 for a working group letter ballot on or before November 20, 2002

4.8.1.1.1. Moved John Fakatselis on behalf of 802.11e

4.8.1.1.2. Discussion

4.8.1.1.2.1. Is it the intent for this motion to expire in 5 days? Worried what happens if there is a delay.

4.8.1.1.2.2. It is a working Group, not a sponsor ballot.

4.8.1.1.2.3. Any objection to removing the date? None

4.8.1.2. Motion on the floor: For 802.11 WG to submit TGe Draft 4.0 for a working group letter ballot.

4.8.1.2.1. Discussion

4.8.1.2.1.1. Any objection to limiting discussion to 1 minute. None.

4.8.1.2.1.2. Motion ID 369

4.8.1.2.2. Vote: Passes 137 : 1 : 4

4.8.1.3. Motion: to empower the TGe Chair to arrange an ad-hoc meeting in the first week of February 2003 to resolve Letter Ballot Comments remaining from the January 2003 meeting

4.8.1.3.1. Moved John Fakatselis on behalf of TGe

4.8.1.3.2. Motion ID 370

4.8.1.3.3. Discussion

4.8.1.3.3.1. Why is this changed to an ad hoc? The WG chairs states that any separate TG meeting apart from a Working Group meeting must be an Ad Hoc according to the WG rules.

4.8.1.3.4. Vote: Passes 131 : 0 : 4

4.8.2. TGf Motions

4.8.2.1. None

4.8.3. TGg Motions

4.8.3.1. Move to issue an 802.11 WG Letter Ballot on Draft 5.0 of the 802.11g draft, to be issued within 14 days of the close of the November 2002 session.

4.8.3.1.1. Moved Matthew Shoemake on behalf of TGg.

4.8.3.1.2. Motion ID 371

4.8.3.1.3. Vote: Passes 133 : 0 : 2

4.8.3.2. *The WG Chair notes that all Wireless Working Groups will meet in Singapore in May 2003.*

4.8.3.3. Move to authorize a working group recirculation ballot on the 802.11g draft following the January 2003 session.

4.8.3.3.1. Moved Matthew Shoemake on behalf of TGg.

4.8.3.3.2. Motion ID 372

4.8.3.3.3. Discussion

4.8.3.3.3.1. Should this be contingent on the LB passing? The rules make that the case. This is just an authorization, not a mandate.

4.8.3.3.4. Vote: Passes 138 : 0 : 5

4.8.4. TGh Motions – Mika Kasslin

4.8.4.1. Move to ask the Working Group to forward TGh D3.0 to the Executive Committee for Sponsor Ballot.

4.8.4.1.1. Mika Kasslin on behalf of TGh

4.8.4.1.2. Motion ID 373

4.8.4.1.3. Discussion

4.8.4.1.3.1. None

4.8.4.1.4. Vote: Passes 136 : 1 : 4

4.8.4.2.　　Move to empower TGh to hold an interim meeting in January 2003 to conduct business required to making progress WRT sponsor ballot processing, conduct teleconferences, create new draft and handle other business necessary to progress through the IEEE standards process.

4.8.4.2.1.　　Mika Kasslin on behalf of TGh

4.8.4.2.2.　　Motion ID 374

4.8.4.2.3.　　Vote: Passes 138 : 1 : 1

4.8.5. TGi Motions – Dave Halasz

4.8.5.1.　　Move for the IEEE 802.11 WG to submit the TGi Draft 3.0 to a working group letter ballot

4.8.5.1.1.　　Moved Dave Halasz on behalf of TGi

4.8.5.1.2.　　Motion ID 375

4.8.5.1.3.　　Discussion

4.8.5.1.3.1.　　none

4.8.5.1.4.　　Vote: Passes 135 : 0 : 4

4.8.5.2.　　Move to recommend to the IEEE 802.11 Working Group Chair that the TGi draft version 3.0 be made available to the general public for purchase through existing IEEE mechanisms.

4.8.5.2.1.　　Moved Dave Halasz on behalf of TGi

4.8.5.2.2.　　Motion ID 376

4.8.5.2.3.　　Discussion

4.8.5.2.3.1.　　This looks innocuous – it is to put out an unapproved draft for WiFi. What does WiFi intend to do if the draft is changed. Until we know the answer this is a bad thing to do.

4.8.5.2.3.2.　　The WiFi alliance is not the only reason to do this. There are also independent crypto people who want to review the draft. There has been a lot of discussion in TGi.

4.8.5.2.3.3.　　In favor – it is a common practice in other working groups to make drafts available for sale through the IEEE. To expand the potential review audience. It adds revenue to the IEEE standards program.

4.8.5.2.3.4.　　In favor – it is considered to be essential to have external review for any security system. We have been talking about this long before WPA was brought up.

4.8.5.2.3.5.　　For both WPA and review, this is a good idea.

4.8.5.2.3.6.　　In favor – suggests that the reasons we have the problems with WEP is due to a lack of review.

4.8.5.2.3.7.　　Call the question (Barry D / Duncan K)

4.8.5.2.3.7.1.　　Vote on calling the question: passes 118 : 0 : 10

4.8.5.2.4.　　Vote: Passes 122 : 6 : 14

4.8.6. 802.18 Radio Regulatory Motions – Carl Stephenson

4.8.6.1.　　Move to approve the filing with the FCC of Reply Comments in ET Docket 02-312 (Biennial Review of Part 15), contained in document 18-02-038r0, authorizing the Chair of 802.18 to do necessary editorial and formatting changes.

4.8.6.1.1.　　Moved Carl Stephenson on behalf of 802.18

4.8.6.1.2.　　Motion ID 377

4.8.6.1.3.　　Discussion

4.8.6.1.3.1.　　Why is 802.11 authorizing 802.18 to do this? The TAG is seeking approval of all wireless working groups. It will be submitted to SEC, and it is helpful to have the approval of the wireless working groups.

4.8.6.1.4.   Vote: Passes 105 : 1 : 18

4.8.6.2.   The 802.18 chair notes that attendance in 802.18 counts towards 802.11 or 802.15 or 802.16 attendance. It is written into the charter of the TAG

4.9. ANA Update

4.9.1.   Will be done on the reflector

4.10. Liaison Updates

4.10.1.   802.11 to CableLabs – Lior Ophir

4.10.1.1.   Document 775

4.10.1.2.   CableHome 1.0 ratified in certification stage.

4.10.1.3.   Working on next generation of CableHome – looking at QoS enhancements.

4.10.1.4.   There was a request for access to CableLabs documents. There are documents available on the public web site. Access to drafts is with membership.

4.10.1.5.   There is a CableLabs tutorial for a future IEEE meeting.

4.10.1.6.   Discussion

4.10.1.6.1.   The WG Chair will sponsor the IEEE tutorial.

4.11. Recess for 15 minutes.

4.12. The meeting is called back to order at 10:20AM

4.13. Liaison Reports

4.13.1.   P1394.1 – Peter Johansson

4.13.1.1.   The report will be posted to the reflector

4.13.1.2.   The committee is defining 1394 wired to wireless bridges.

4.13.1.3.   All outstanding comments have been resolved.

4.13.1.4.   Sponsor Ballot in a few months.

4.13.2.   802.19 TAG closing report

4.13.2.1.   Report in 802.19 document 013

4.13.2.2.   Website at 802.org/19

4.13.2.3.   Reflectors have been started

4.13.2.4.   The website will be forwarded to the recording secretary of the SEC.

4.13.2.5.   There was joint session on UWB coexistence, In particular 802.11a interference. They are 802.15 documents.

4.13.2.6.   Expecting presentations in January in 802.15.sg3a

4.13.2.7.   A generic PHY model has been developed to study the interaction between RF standards. An Open Source PHY model.

4.13.2.8.   Looking to create a score for interference and coexistence for proposals.

4.13.2.9.   Working on operating rules document for 802.19. Reviewing PAR and 5C.

4.13.2.10.   802.19 will work with 802.15.sg3a in coexistence issues.

4.13.2.11.   Discussion

4.13.2.11.1.   None

4.14. 802.11 Standards Roll-up – Terry Cole

4.14.1.   Report in document 486r6

4.14.1.1.   Will call the new document 802.11-1999 (reaffirm 2003)

4.14.1.2.   Review of the approval process

4.14.1.3.   Sponsor Ballot Resolution Committee has been formed. Members of 802.11 may volunteer.

4.15. WG Operating Rules

4.15.1.   Document 780r0

4.15.1.1.   LB47 closing report on document 331r4.

4.15.1.2.   356 voters, 77% return, vote 245 : 18 : 12

4.15.1.3.   Document 01-331r4 becomes the official WG rules of 802.11 WG Chair.

4.15.1.4.   60 comments – 50% were processed, remaining resolutions in January 2003

4.15.1.5.   Thanks to the resolution team for their help.

4.15.1.6.   Most comments were editorial. Some were questioning the rules on missing letter ballots.

4.15.1.7.   In conclusion, R4 is our operating rules.

4.15.2.   Discussion

4.15.2.1.   None

4.16. New Business

4.16.1.   None

4.17. Comments from the Chair

4.17.1.   We have three letter ballots going out. TGe, TGg, and TGi. They are all 40 day letter ballots.

4.17.2.   SEC Tonight – TGj PAR and 5C. TGg procedure. TGk for RRM. Extension on HTSG.

4.17.3.

4.18. 802.15.2 – Steve Shellhammer

4.18.1.   The 802.11 WG previously held a LB on 802.15.2

4.18.2.   Last letter ballot passed 161: 40 : 65

4.18.3.   Comments have been resolved.

4.18.4.   802.15 voted to send this new draft to LB

4.18.5.   Move that draft 802.15.2-D07 be sent out to WG Letter Ballot.

4.18.5.1.   Moved Shellhammer

4.18.5.2.   Second Lansford

4.18.5.3.   Motion ID 378

4.18.5.4.   Vote: Passes 101 : 0 : 11

4.19. Liaison Reports

4.19.1.   The WG chair asks are there any volunteers to serve as the Liaison to JC61? Tim Wakeley is selected as the new Liaison by acclamation.

4.19.2.   JC-61 Liaison Report – Tim Wakeley

4.19.2.1.   Report in Document 730R0

4.19.2.2.   JC61 has selected the RF Baseband signaling spec. 3 differential pairs.

4.19.2.3.   Elected a new committee chair.

4.19.2.4.   Formed a new compatibility and interoperability task group.

4.19.2.5.   Formed a MAC PHY protocol committee.

4.19.2.6.   Sent out a 21 day letter ballot on MAC PHY signaling

4.19.2.7.   Sent out 40 day LB on RF Baseband

4.19.2.8.   Next meeting Jan 9-10 in Fort Lauderdale.

4.20. New Business – Mobile PARS

4.20.1.   There are discussions on Mobile PARs. The chairs would like to present to clarify their positions.

4.20.2.   The 802.16 PAR is extensively revised during this week. It has been posted and circulated. The presentation compares the two PARs and also against 3G.

4.20.3.   Because of the revision of the 16E PAR we believe there is a distinct identity.

4.20.4.   Brian Keernan – TGa 802.16a Chair, and mobile SG. Mark Klerer – MBWA Study Group.

4.20.5.   802.16e

4.20.5.1.   The service provider is the customer. They decide what to provide to who, and what technology to use.

4.20.5.2.   Looking to add an adjunct mobility capability to a fixed wireless service provider.

4.20.5.3.   Providing symmetric high bandwidth.

4.20.5.4.   Mobile application requires a smaller device.

4.20.5.5.   Maintaining low latency service for mobile user.

4.20.5.6.   Serving the wireless broadband service providers, with an enhancement to the primary fixed offering.

4.20.5.7.   This is an extension to the 802.16 MAC with extensions for handoff and roaming.

4.20.5.8.   Optimized for Fixed, fully backward compatible with fixed users.

4.20.5.9.   Targeting licensed bands from 2 – 6 GHz, with 5Mhz channels (or wider)

4.20.6.   MBWA SG

4.20.6.1.   Trying to go after the unfilled need in high speed mobile data market. Filling in the space between 802.11 and 3G. There should be a fully mobile data system that minimized the speed loss when going to licensed spectrum over a wide area.

4.20.6.2.   Need more symmetrical data bandwidths than offered by 3G.

4.20.6.3.   Need low latency for interactive services. 3G doesn't provide low latency.

4.20.6.4.   Looking at wireless data service providers. Could be a hot spot.

4.20.6.5.   Need to address the PHY and MAC as combined entity – ground up design optimizing both.

4.20.6.6.   MBWA is customized for full mobility with no other constraints. No concern for convergence.

4.20.6.7.   Spectrum – under 3.5GHz. Channels smaller than 5Mhz.

4.20.6.8.   Packet oriented architecture. Supports TCP natively.

4.20.7.   Discussion

4.20.7.1.   Are these documents on the web site?

4.20.7.2.   Could the MBWA team summarize the end-to-end QoS capability? MBWA is an SG – will be soliciting solutions. Plan to bring the IP architecture all the way to the edge. Using DIFFSERV model with IP priorities. Do not want a contention based MAC which cant keep the flow.

4.20.7.3. In 802.11e terms, it is parameterized? Yes.

4.20.7.4. Which IP version is being considered? IPV4 or IPV6?

4.20.7.4.1. Mark K – Yes IPV6 would be nice, however, it must support IPV4, will use foreign agents and address translation.

4.20.7.4.2. Brian K – IPV4 is there. IPV6 is transparent. For mobility, there is mobile IPV6 and Mobile IPV6. We don't drive the IP version.

4.21. Next meeting – January 12-17, 2003, Fort Lauderdale, Florida.

4.22. The meeting is adjourned at 11:15AM

IEEE P802.11
Wireless LANs

Minutes of 802.11 Task Group E
MAC Enhancements - QoS

Hyatt Regency Kauai, Kauai, HI, USA

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1.   Monday Afternoon, November 11, 2002

1.1. Opening

1.1.1.   **The meeting is called to order at 3:30PM by John Fakatselis**

1.1.2.   **Secretary Tim Godfrey**

1.1.3.   **Review of the agenda**

1.1.3.1.   Review minutes from previous meeting

1.1.3.2.   Call for papers

1.1.3.3.   Tomorrow – technical discussion of formulating a new draft. Papers would be in order, as well as comment resolutions

1.1.3.4.   We will develop a new draft.

1.1.3.5.   A motion to go to letter ballot would be in order after we have reviewed the new draft.

1.1.3.6.   Fixed Time Items are on the agenda.

1.1.4.   **Discussion on the agenda**

1.1.4.1.   None

1.1.4.2.   After the call for papers we will discuss the need for an ad-hoc group to help with editing.

1.1.5.   **Approval of the agenda**

1.1.5.1.   The agenda is approved unanimously.

1.1.6.   **Discussion on the objectives**

1.1.6.1.   None

1.2. Review of 802.11 policies and rules

1.2.1. Straw Poll

1.2.1.1. *How many new participants – about 5*

1.2.2. The chair reviews voting rules and the process

1.2.2.1. *. Non-voters are allowed to participate in discussion, at the discretion of the chair. Non-voters cannot bring a motion.*

1.2.2.2. *members are requested to not stall the process by unnecessary use of privileged motions.*

1.2.3. Discussion

1.2.3.1. *We have a potential problem because of all the voters that have lost their rights.*

1.2.3.2. *The chair says we will go on an honor system. If anyone notices a non-voter voting, it must be brought up at that time. It cannot be changed later.*

1.3. Approval of minutes

1.3.1. Are there any questions or issues with the minutes of the September 2002 meeting in Monterey.

1.3.1.1. *None.*

1.3.1.2. *The minutes of September 2002 are approved with unanimous consent.*

1.4. Call for Papers

1.4.1. There might be two kinds of papers: 1) suggestions to modify the text of the draft. They bring a motion to be considered. (these will require normative text as well).

1.4.1.1. *The chair reviews the 4 hour rule for bringing technical motions on the draft.*

1.4.2. Srini Kandala

1.4.2.1. *649r2 Letter Ballot Comment Resolution*

1.4.2.2. *679r0 suggested changes to TGe draft. Has motions.*

1.4.2.3. *680 Annex D for TGe*

1.4.3. John Kowalski

1.4.3.1. *Assorted fixes for TSPEC (Motions)*

1.4.3.2. *QoS-Poll modifications involving priority (Motions)*

1.4.4. Mathilde Benveniste

1.4.4.1. *Performance Comparisons (Motions)*

1.4.5. Mark

1.4.5.1. *678 Uniform Condition Control Signal (motion)*

1.4.6. Anjad

1.4.6.1. *709 TGe Scheduler Minimum performance requirements (motion)*

1.4.7. Javier

1.4.7.1. *705 Mandatory TSPEC parameters and simple scheduler (motion)*

1.4.8. Qiang

1.4.8.1. *674r0 enhancing 802.11 performance with no contention increase (no motion).*

1.4.9. Peter

1.4.9.1. *higher layer*

1.4.10. Duncan

1.4.10.1. *Group Acknowledgement*

1.4.10.2. *PICS*

1.4.11. Keith

1.4.11.1. *Depending on outcome of other discussion, there may be brief follow-up No Titles are currently written.*

1.5. Scheduling of Papers

1.5.1. Initial Discussion

1.5.1.1. *Guidelines*

1.5.1.1.1. *The chair requests papers be limited to 15 minutes.*

1.5.1.2. *Discussion*

1.5.1.2.1. *One of the editor's papers is the report on the comment resolution teleconferences to the group. It has 10 motions, and will need about an hour.*

1.5.1.2.2. *We will take the necessary time there.*

1.5.1.2.3. *We will ask other presenters if they need more than 15 minutes. No other presenters need extra time.*

1.5.1.3. *Overview of process*

1.5.1.3.1. *We need to get all motions done before tomorrow night. That will give us time on Wednesday to incorporate into the draft the results of all the motions.*

1.5.1.3.2. *Otherwise we cannot have a draft to present on Thursday.*

1.5.1.3.3. *Everybody must submit papers by tonight. All papers will be covered by tomorrow.*

1.5.1.3.4. *It is no longer necessary to have the edited document by the end of the week to send it out to letter ballot. Wouldn't it be better to spend out time here making group decisions, and edit the draft after we leave here.*

1.5.1.3.5. *The editor would like to complete the work here. We have to build the PICS and it will need a lot of discussion. Maybe we can focus on the PICS on Wednesday. The PICS is normative text.*

1.5.1.3.6.   It takes time to make the PICS and accurately reflect all the technical changes that have been adopted.

1.5.1.3.7.   We will leave time for PICS work on Wednesday and Thursday.

1.5.1.4.   Editing work

1.5.1.4.1.   The editor is thinking about soliciting help on editing.

1.5.1.4.2.   One of the papers is on the PICS.

1.5.1.4.3.   It is very important and must be discussed. It is not an editorial task.

1.5.2.   Which papers are submitted?

1.5.2.1.   650

1.5.2.2.   649, 679, 680

1.6.   Presentation of Comment Resolutions

1.6.1.   Document 649r2

1.6.1.1.   The first 20 comments are in 649r0.

1.6.1.2.

1.6.1.3.   Comment 99 – accepted without objection

1.6.1.4.   Comment 100 – accepted without objection

1.6.1.5.   Comment 101 – editorial. accepted without objection.

1.6.1.6.   Comment 102 – accepted without objection

1.6.1.7.   Comment 103 – accepted without objection

1.6.1.8.   Comment 104 – accepted without objection (we will complete the PICS in this meeting)

1.6.1.9.   Comment 105 – accepted without objection. Line is deleted

1.6.1.10.   Comment 106 – accepted as editorial. without objection.

1.6.1.11.   Comment 107- alternate resolution. There is a need to identify a "legacy" STA. Get rid of WSTA in the definition where it was objected to, but keep it otherwise.

1.6.1.11.1.   Discussion – would like to remove WSTA. The editor thinks WSTA is useful. Removing it means that many occurrences of "QoS Non-AP STA" is required. How about Non-AP QSTA?

1.6.1.11.2.   The group accepts "Non-AP QSTA" as the term to replace WSTA.

1.6.1.11.3.   Resolution accepted without objection

1.6.1.12.   Comment 108 – accepted without objection.

1.6.1.13.   Comment 109 – accepted without objection.

1.6.1.14.   Comment 110 – accepted without objection.

1.6.1.15.   Comment 111 (was due to editorial change) – accepted without objection.

1.6.1.16.   Comment 112 – accepted without objection.

1.6.1.17. *Comment 113 – accepted without objection.*

1.6.1.17.1. *We have completed a MIB and it will be submitted tomorrow. It has compiled.*

1.6.1.18. *Comment 114 – duplicate of 104.*

1.6.1.19. *Comment 115 – declined, no specific action is requested. There is nothing missing from D3.3 other than the MIB and PICS.*

1.6.1.20. *Comment 116 – declined – no specific action*

1.6.1.21. *Comment 118 – declined (noted incorrectly in document 649r2)*

1.6.2. Closing

1.6.2.1. *The chair will ask for approval for a block of remaining comments tomorrow. There will be a chance for discussion if there are any questions.*

1.6.2.2. *Any Objection? None.*

1.6.3. Recess at 5:30PM

2. Tuesday Morning, November 12, 2002

2.1. Opening

2.1.1. The meeting is called to order at 8:00 by John Fakatselis.

2.1.2. Discussion

2.1.2.1. *Agenda for this morning is presentation of papers and considering the motions with them.*

2.1.2.2. *We need to conclude the comment resolution.*

2.1.2.3. *Is there any objection to accept the resolutions in document 649r2, with the exception of the three comments that are yet to be addressed.*

2.1.3. Procedural motions

2.1.3.1. *To automatically table any technical motion that the discussion exceeds the 10 minute time limit. This is in conjunction with the initial technical paper presentations during this week.*

2.1.3.2. *moved Srini*

2.1.3.3. *second John K*

2.1.3.4. *Discussion*

2.1.3.4.1. *What is the effect of this? Does that mean it could immediately be brought back? Yes. We could waste time bringing it back. Suggests changing it to "postpone".*

2.1.3.5. *Motion to amend: replace "table" with "postpone", and add "after we cycle through all the initial presentations in a FIFO order". Delete "This is in conjunction with the initial technical paper presentations during this week."*

2.1.3.5.1. *Matthew / Srini*

2.1.3.5.2. *Discussion*

2.1.3.5.2.1.   Against the motion – it creates additional rules and wastes time. We should let the chair suggest to table. We could also come back to all motions at the end. Suggests that a motion would be needed to make motions during presentations out of order.

2.1.3.5.3.   Vote on the motion to amend: 3:13:7

2.1.3.5.4.   Vote on the main motion: 2: 8 : 12

2.1.3.6.   Motion to not consider technical motions until after all initial presentations are completed.

2.1.3.6.1.   Moved Duncan

2.1.3.6.2.   Matthew

2.1.3.6.3.   Discussion

2.1.3.6.3.1.   Objection – This means all editing has to be done at the last minute. We need to give time for the editor to make the changes this week.

2.1.3.6.3.2.   Against this – this jeopardizes getting a letter ballot out.

2.1.3.6.3.3.   Presenters should take straw polls before making motions.

2.1.3.6.3.4.   Vote on the motion: Fails 3: 11 : 8

2.2.   *Presentation of Papers*

2.2.1.   **Document 657r0a. "Suggested Changes to TGe, D3.3. (K Amann, et al)**

2.2.1.1.   MIB

2.2.1.1.1.   A MIB has been created in document 02/680r0.

2.2.1.1.2.   Move to incorporate the text in 02/680r0 into the TGe draft.

2.2.1.1.2.1.   Moved Srini / Frank

2.2.1.1.2.2.   Vote: Motion adopted without objection.

2.2.1.2.   Service Class

2.2.1.2.1.   Service Class: modify strictly ordered service class text to only include non-QoS stations.

2.2.1.2.2.   Motion to instruct the editor to incorporate in the TGe draft, the changes to the draft text indicated in document 02/679r0 regarding service classes in clauses 6.1.3, 6.2.1.1.2, 6.2.1.2.2 and 6.2.1.3.2

2.2.1.2.2.1.   Moved Srini / Keith

2.2.1.2.2.2.   Vote: motion adopted without objection

2.2.1.3.   Sequence Number assignment for management frames.

2.2.1.3.1.   There is a general agreement that these frames are assigned from a single modulo 4096 counter. Suggest adding wording to allow assignment of sequence numbers for broadcast multicast frames.

2.2.1.3.2. *Sequence numbers sometimes have to be generated in a SIFS duration. Propose using sequence number of 0 for all QoS+Null frames.*

2.2.1.3.3. *Move to instruct the editor to incorporate in the TGe draft, the changes to the draft text indicated in document 02.679r0 in clause 7.1.3.4.1.*

2.2.1.3.3.1. Moved Srini / Keith

2.2.1.3.3.2. Discussion

2.2.1.3.3.2.1. What does this do to bcast/mcast seq numbers? It depends on the TID of the UP.

2.2.1.3.3.2.2. What happens for mcast from sta to AP?

2.2.1.3.3.3. Motion to table (Duncan / srini)

2.2.1.3.3.3.1. No Objection

2.2.1.3.4. *Sequence Number Assignment.*

2.2.1.3.5. *Straw Poll*

2.2.1.3.5.1. Do you want the sequence numbers assigned to MPDUs destined to different RAs from the same counter?

2.2.1.3.5.2. Discussion

2.2.1.3.5.2.1. This is an implementation question. The MPDU is uniquely identified by source, destination and seq. This is not needed for interoperability.

2.2.1.3.5.3. Vote on the straw poll: 12 : 8 : 4

2.2.1.3.5.4. Recount: 13 : 8 : 4

2.2.1.3.5.5. There will be no motion on this topic.

2.2.1.4. *Duration Rules*

2.2.1.4.1. *Move to instruct the editor to incorporate in TGe draft, the changes to the draft text indicated in document 02/679r0 in clause 7.2.1.1, 7.2.2, and 7.2.3*

2.2.1.4.1.1. Moved Srini / John K

2.2.1.4.1.2. The motion is adopted without objection

2.2.1.5. *Duration with no ACK*

2.2.1.5.1. *Move to instruct the editor to incorporate in TGe draft, the changes to the draft text indicated in 02/xxxr0 in clause 7.1.3.2.*

2.2.1.5.2. *Friendly amendments?*

2.2.1.5.3. *Move to table (Duncan /) Without objection*

2.2.1.6. *Duration for polled TXOPs*

2.2.1.6.1. *Move to instruct the editor to incorporate in the TGe draft, the changes to the draft text in 02/679r0 in clauses 9.10.2.2 and 9.10.2.3.2.*

2.2.1.6.1.1. Moved Srini / John

2.2.1.6.1.2. Motion is adopted without objection

2.2.1.7. Duration rule for EDCF TXOP when Group ACK is used.

2.2.1.7.1. Move to strike 9.11.3 (Line 7, page 76) from the draft.

2.2.1.7.2. Moved Srini / John

2.2.1.7.3. Motion adopted without objection

2.2.1.8. CIF and ECF in Probe Request

2.2.1.8.1. Suggests eliminating CIFs in probe request

2.2.1.8.2. Move to instruct the editor to delete all the changes, in the TGe draft, that are made to clause 7.2.3.8 and restore it to the text in the approved base standards (802.11 and 802.11d).

2.2.1.8.2.1. Moved Srini / Keith

2.2.1.8.2.2. Motion adopted without objection

2.2.1.9. Probe Response

2.2.1.9.1. QoS Parameter Set gives the EDCF parameters that may be useful to determine if the STA wishes to join any given BSS.

2.2.1.9.2. Adding QoS Parameter Set to Probe Response frame.

2.2.1.9.2.1. To make it consistent with the beacon, order QoS Parameter Set between QBSS load and Extended Capability Information field.

2.2.1.9.3. Move to instruct the editor to add QoS Parameter Set to Table 12 and make the order consistent with Table 5 in the TGe draft.

2.2.1.9.3.1. Moved Srini / Peter

2.2.1.9.3.2. Motion adopted without objection

2.2.1.10. Handling of frames that are associated with a TS at the AP

2.2.1.10.1. Suggests rules for how a frame associated with a TS should be handled at the receiver.

2.2.1.10.2. Move to instruct the editor to incorporate into the TGe draft, the changes to the draft text indicated in 02/679r0 in clause 6.1.1.1

2.2.1.10.2.1. Moved Srini

2.2.1.10.2.2. Motion to amend: add "an exiting" before "TSPEC set up for the frame" in document 679r0

2.2.1.10.2.2.1. Mathilde

2.2.1.10.2.2.2. Amendment adopted without objection.

2.2.1.10.2.3. Change document 679r1 to incorporate the change.

2.2.1.10.3. Motion on the floor: Move to instruct the editor to incorporate into the TGe draft, the changes to the draft text indicated in 02/679r1 in clause 6.1.1.1

2.2.1.10.3.1. Moved Srini / Matthew

2.2.1.10.3.2.   Motion passes with unanimous consent

2.2.1.11.   *Recovery in a polled TXOP*

2.2.1.11.1. *Differences in recovery procedure for STA and AP. The AP "may" initiate recovery.*

2.2.1.11.2. *Instruct the editor to incorporate into the TGe draft, the changes to the text relating to the recovery rules indicated in 02/679r0 in clause 9.10.2.1.2.*

2.2.1.11.2.1.   Moved Srini / Keith

2.2.1.11.2.2.   Discussion

2.2.1.11.2.2.1.   Why do we make this distinction? Why force them to do it this way with a "shall"? It is hard to test.

2.2.1.11.2.2.2.   Is the HC allowed to recover? Not if it is not the TXOP coordinator.

2.2.1.11.2.3.   Vote on the motion: Passes 16 : 1 : 6

2.2.1.12.   *Change to Figure 11.1*

2.2.1.12.1.1.   Figure is correct only for WEP.

2.2.1.12.1.2.   The enhancements required by TGi will be made by TGi, as required.

2.2.1.12.1.3.   This is an editorial issue.

2.2.1.12.2. *Motion: Replace Encryption by WEP in figure 11.1.*

2.2.1.12.2.1.   Moved Srini / Thomas

2.2.1.12.2.2.   Discussion

2.2.1.12.2.2.1.   Why specify WEP? Use something generic. We can't specify TGi since it is not done.

2.2.1.12.2.2.2.   All we need to do is be sure it is fixed in a future roll-up.

2.2.1.12.2.2.3.   Would it be correct for TKIP? Yes

2.2.1.12.2.2.4.   How about replacing with "Security".

2.2.1.12.2.3.   We will consider this editorial. Motion is withdrawn.

2.2.1.13.   *Straw Polls*

2.2.1.13.1. *Action Frame Formats: Should we try to reconcile with TGh action frames, since they are further along? Should we adopt the TGh way, or stick with what we have?*

2.2.1.13.1.1.   Discussion

2.2.1.13.1.1.1.   What is the benefit? It does simplify the frame format.

2.2.1.13.1.1.2.   Which is closer to legacy? There is no action frames in legacy.

2.2.1.13.1.2.   Straw Poll results: 13 : 0 : 10

2.2.1.13.2. *TXOP Duration Request vs. TC Queue Size:*

2.2.1.13.2.1. Currently there are two alternate ways to indicate the bandwidth requirements. TXOP duration request appears to be useful when the STA wishes to indicate the amount of time it takes to transmit one MPDU. TC queue size is useful for optimization of scheduling by the HC. However, this creates confusion and we should have some specific rules as to what is used in which context. There are four ways of resolving the issue: Use only TXOP duration requested Use only TC queue size Use both of them, but the HC gets to decide which one is used (through a capability element) Use both of them – reserve TXOP duration request only when an allocated TXOP is not sufficient to send at least one MPDU; use TC queue size otherwise.

2.2.1.13.2.2. Question: What should we have in QoS Control?

2.2.1.13.2.2.1. TXOP duration requested only. 4 votes.

2.2.1.13.2.2.2. TC Queue size only. 2 votes

2.2.1.13.2.2.3. Both but the HC gets to decide through a capability element. 3 votes

2.2.1.13.2.2.4. Both – use TXOP duration requested only when the STA's TXOP size is smaller than the time for MPDU transmission; use TC Queue size otherwise. 7 votes

2.2.2.   Document 650r0, "Assorted fixes & normative text for known issues with TSPEC & Signaling". Kowalski et al.

2.2.2.1.   *7.1.3.5 QoS Control field:*

2.2.2.1.1.   *Added a bit to signal if there is a pending Schedule QoS Action frame that needs to be sent to the WSTA to which the current frame is addressed*

2.2.2.1.2.   *7.1: Add text to indicate interaction of schedule frame with power-save.*

2.2.2.2.   *7.3.2.15:*

2.2.2.2.1.   *Maximum MSDU size field defined.*

2.2.2.2.2.   *Nominal MSDU Size Field reinterpreted for clarity. (Fixed means fixed.)*

2.2.2.3.   *7.4.1 QoS Management Actions. Added schedule element in ADD-TS response*

2.2.2.4.   *Motion: To instruct the editor to include the changes indicated in 11-02/650r0 into the draft.*

2.2.2.4.1.   *Moved Kowalski*

2.2.2.4.2.   *Discussion*

2.2.2.4.2.1.   QoS Control Field pending schedule bit: it is there to let the STA know that a Schedule element is coming, so it won't go into PS mode.

2.2.2.4.2.2. This may be in conflict with an upcoming presentation. May be best to wait.

2.2.2.4.3. *Second Amjad*

2.2.2.4.4. *Discussion*

2.2.2.4.4.1. There might be fewer abstentions if we had more time.

2.2.2.4.4.2. Motion to postpone until after document 02/706 is presented.

2.2.2.4.4.2.1. Mathilde / Peter

2.2.2.4.4.2.2. Vote on the motion: passes 16 : 3 : 6

2.2.3. Recess at 10:00AM

2.3. Opening

2.3.1. The meeting is called to order at 10:30AM by John Fakatselis

2.4. Presentation of Papers

2.4.1. Document 02/706r0, "QoS Poll Modifications allowing Priority", Matthew Sherman

2.4.1.1. *We need to support priority based polling and scheduling. There are problems with the existing draft.*

2.4.1.2. *Suggestion of how to add and change bits to enable this.*

2.4.1.3. *Motion deferred until this afternoon.*

2.4.1.4. *Full changes are described in the word version of 02/706.*

2.4.1.5. *Discussion*

2.4.1.5.1. *This is completely orthogonal to document 650.*

2.4.1.5.2. *The new text in 9.10.2.4: does anything prevent a station from aggregating in the current draft? It isn't explicit in the current draft.*

2.4.1.5.3. *Wants clarification of how aggregation is handled. Can TXOPs be aggregated? Is the TSPEC coming down aggregated?*

2.4.1.6. *Straw Polls*

2.4.1.6.1. *Who would support the changes in 02/706 as currently stated? Vote: 5 for, 7 against, 16 abstain.*

2.4.1.6.2. *Who would support the changes in 02/706 with changes to section 9.10.2.4 removed. Vote: 5 for, 3 against, 23 abstain.*

2.4.2. Motions from document 650r0

2.4.2.1. *To instruct the editor to include the changes indicated in 11-02/650r0 into the draft.*

2.4.2.1.1. *Moved John K.*

2.4.2.1.2. *Discussion*

2.4.2.1.2.1.   This is completely orthogonal to the presentations of 706.

2.4.2.1.2.2.   All this does is fix known signaling problems in the TSPEC.

2.4.2.1.3.   *Second Peter J*

2.4.2.1.4.   *Vote on the motion: Motion passes with unanimous consent.*

2.4.3. Document 688r0 "MA-UNITDATA-STATUS.indication Interpretation", Mike Moreton

2.4.3.1.   *Two possible interpretations,*

2.4.3.1.1.   *Synchronously right after receipt of request,*

2.4.3.1.2.   *Asynchronously, at some point in the future.*

2.4.3.2.   *Somebody had argued for the synchronous interpretation, but there are many reasons for the asynchronous interpretation.*

2.4.3.3.   *Motion: Direct the editor to incorporate the changes described in document 11-02-688r0 slide 5.*

2.4.3.3.1.   *Moved Mike Moreton*

2.4.3.3.2.   *Discussion*

2.4.3.3.2.1.   Is this for asynchronous or synchronous? It is for asynchronous. It gets rid of changes that make it synchronous and goes back to the base standard.

2.4.3.3.3.   *Second Srini*

2.4.3.3.4.   *Vote: Passes 23 : 0 : 16*

2.4.4. Document 02/687r0, "IE Propagation in an IBSS", Mike Moreton

2.4.4.1.   *Issue with ignoring unknown information in a beacon, conflicting with the rule to always adopt elements in an IBSS.*

2.4.4.2.   *Option 1 is to just not join an IBSS if any unknown elements are seen.*

2.4.4.3.   *Option 2 is to copy elements it doesn't understand, and adds them to its own beacon.*

2.4.4.4.   *Option 3 is to ignore unknown elements, but some useful information could get lost.*

2.4.4.5.   *Option 4 is to mark some elements as "discardable".*

2.4.4.6.   *Straw Poll – which options do members prefer?*

2.4.4.7.   *Discussion first:*

2.4.4.7.1.   *Option 2 should specify that future versions should not define elements that would cause lack of interoperability if they are not present.*

2.4.4.8.   *Straw Poll Results:*

2.4.4.8.1.   *Option 1: 0 votes for, 22 against*

2.4.4.8.2.   *Option 2: 18 for, 9 against*

2.4.4.8.3.   *Option 3: 11 for, 9 against*

2.4.4.8.4.   *Option 4: 1 for, 14 against*

2.4.4.8.5. *None/don't care/abstain: 9 votes*

2.4.5. **Document 722ar0, "Proposed TGe PICS", Duncan Kitchin**

2.4.5.1. *The PICS could make both access modes optional.*

2.4.5.2. *QoS overall is optional. Both distributed and centralized channel access are optional, but one must be implemented.*

2.4.5.3. *The PICS is the place where optional and mandatory are specified.*

2.4.5.4. *Discussion*

2.4.5.4.1. *How would this play into purchasing decision. How would an IT manager decide what to buy to create a scalable system? That is a branding issue. All the features will be marked and decided by WiFi*

2.4.5.4.2. *What is the interoperability between CF13 and CF14? There is base interoperability due to the frames.*

2.4.5.4.3. *In support of this. We need to work from the bottom up. We might find that HCF should be mandatory.*

2.4.5.4.4. *If we make them both optional, we will need more bits to indicate capabilities.*

2.4.5.4.5. *Believes that both should be mandatory. Ultimately, we want to support HCF everywhere. Maybe in the short term, it could be optional.*

2.4.5.4.6. *This has to be partitioned by both AP and Station. Some things may be mandatory at AP but not at the STA. There is a way of saying that PICs entries are contingent on being an AP.*

2.4.5.4.7. *Full optionality results in non-interoperable QoS implementations, essentially separate standards.*

2.4.5.4.8. *This will lead station and AP makers to provide full functions, and tend to implement both.*

2.4.5.4.9. *There is some case to be made for EDCF in the context of IP-centric. Other mechanisms have not taken off.*

2.4.5.4.10. *We had straw polls last meeting – there was good enough support for EDCF mandatory. The standard exists to insure interoperability.*

2.4.5.4.11. *The reason AT&T is here is because they are building a next generation packet network. Wants to make sure QoS is available to support that.*

2.4.5.4.12. *The enterprise space will be where QoS challenges are the greatest. The best way to meet the challenges is with both HCF and EDCF, especially in the presence of legacy stations.*

2.4.5.4.13. *We know that manufacturers will implement both mechanisms. The delay is hurting us. We need to be sure the standard is completed and meets the needs met.*

2.4.6. **Recess at 12:00 noon**

3. Tuesday Evening, November 12, 2002

3.1. Opening

3.1.1. **The meeting is called to order at 7:00PM by John Fakatselis**

3.2. Presentation of Papers

3.2.1. **Document 709r0, "TGe Scheduler Minimum performance requirements", Soomro et al.**

3.2.1.1. *Scheduler to allocate sufficient time to transmit committed data rate during a specified time interval.*

3.2.1.2. *Discussion*

3.2.1.2.1. *How are retransmissions dealt with in this concept? These requirements assume the channel is perfect.*

3.2.1.2.2. *Is there any assumption of the minimum time interval? T2 has to be larger than D.*

3.2.1.2.3. *How does this work with power save? You might waste a lot of efficiency – the allocations might have to be double size to accommodate a possible retry.*

3.2.1.2.4. *This is trying to make a simple test for conformance – to see if a test station gets a specified bandwidth.*

3.2.1.2.5. *This approach presumes a time-slicing approach to scheduling. It prohibits priority-based scheduling techniques. This gives less flexibility.*

3.2.1.3. *Motion deferred*

3.2.2. **Document 705ar0, "Mandatory TSPEC Parameters and Reference Design of a simple Scheduler", J Del Prado et al.**

3.2.2.1. *TSPEC has 12 parameters that allow any type of scheduling algorithm.*

3.2.2.2. *Only 3 parameters are needed for the scheduler.*

3.2.2.3. *Mean Data rare, Maximum service interval / delay bound, Nominal MSDU size.*

3.2.2.4. *The scheduler must be able to use these parameters.*

3.2.2.5. *Simple scheduler to use Service Interval and TXOP duration.*

3.2.2.6. *Allocate TXOPs repeatedly in Service Intervals.*

3.2.2.7. *Discussion*

3.2.2.7.1. *Would these rules conflict with an implementation of a more "intelligent" scheduler? If more parameters are present, they could be used.*

3.2.2.7.2. *What mechanism is used to announce what "flavor" of scheduler the AP is using and how to respond? Has that been addressed? Not yet.*

3.2.2.8.   *Move to instruct the editor to incorporate the text in 02/709r0 into the TGe draft*

    3.2.2.8.1.   *Moved Javier D*

    3.2.2.8.2.   *Second Srini*

    3.2.2.8.3.   *Vote on the motion: Passes 25 : 2 : 11*

3.2.2.9.   *Move to instruct the editor to incorporate the text in 02/705r0 into the TGe draft*

    3.2.2.9.1.   *Moved Javier D*

    3.2.2.9.2.   *Second John K*

    3.2.2.9.3.   *Vote on the motion: passes with unanimous consent.*

3.2.3.   Document 723r0, Draft text for higher-level synchronization", Peter Johansson

3.2.3.1.   *Providing support for higher layer timer synchronization.*

3.2.3.2.   *Clause 5 is descriptive text. Clause 11.5 is normative, but not new.*

3.2.3.3.   *Propose three new primitives to support clock synchronization by a protocol layer above the MAC.*

3.2.3.4.   *Motion- TGe instructs the editor to incorporate the text in 02/723r into the next P802.11e working draft.*

    3.2.3.4.1.   *Moved Peter J*

    3.2.3.4.2.   *Second Srini*

    3.2.3.4.3.   *Vote: The motion passes with unanimous consent.*

3.2.4.   Document 678r0, "Uniform 802.11e admissions control signaling for HCF and EDCF", Mark Bilstad

3.2.4.1.   *Sometimes explicit admissions control is needed, independent of access method.*

3.2.4.2.   *TSPEC status codes are insufficient.*

3.2.4.3.   *Define new TSPC TSInfo field bits.*

3.2.4.4.   *Motion: Direct the editor to incorporate the changes described in 02/678r0 slide 3 (new status code)*

    3.2.4.4.1.   *Moved Liwen Wu*

    3.2.4.4.2.   *Discussion*

        3.2.4.4.2.1.   How does this interact with the minimum performance requirements we just adopted?

        3.2.4.4.2.2.   If a station presents the AP with a TSPEC that specifies EDCF and the AP rejects it, could the station still use EDCF? We don't want to require that all admission control go through the TSPEC. Best effort would still be under admission control. It could be the policy of an AP to accept traffic under admission control.

        3.2.4.4.2.3.   There have been discussions of whether a station that was using HCF was

permitted to also use EDCF. They could get "extra" resources that way. Why does this permit both? How that matches with TSPEC parameters is TBD.

3.2.4.4.2.4. What is a scenario where you would use both at the same time? It is useful for error recovery on the medium. Polling to give a guaranteed amount, but EDCF for a retry.

3.2.4.4.2.5. How does this interact with distributed admission control already in the draft? They go together in the sense that the beacon predicts what sort of TSPECs will be accepted by the HC. How does a client know if it needs to perform an explicit handshake? Hasn't been specified.

3.2.4.4.3. *Second Srini*

3.2.4.4.4. *Discussion*

3.2.4.4.4.1. In favor – it helps in the way EDCF and polled access will coexist.

3.2.4.4.4.2. It is not finalized – there are conflicts with what has been proposed. It will generate more comments.

3.2.4.4.4.3. This motion cannot stand-alone without the other motion.

3.2.4.4.5. *Motion to table*

3.2.4.4.5.1. Soomro / Srini

3.2.4.4.5.2. Vote: The motion is tabled without objection.

3.2.5. Document 674r0 "Enhancing IEEE 802.11 performance with slow CW decrease", Qiang Ni.

3.2.5.1. *Wants to change contention rules to not reset CW window size upon successful transmission of a frame. Propose "slow" contention window decrease.*

3.2.5.2. *Multiply CW by 0.8 upon successful transmit.*

3.2.5.3. *Other CW decrease techniques are also possible.*

3.2.5.4. *Review of simulation results*

3.2.5.5. *Discussion*

3.2.5.5.1. *None*

3.2.5.6. *No Motions*

3.2.6. Document 712r0, "802.11e features for the enterprise", Mathilde Benveniste

3.2.6.1. *To emphasize the need to have HCF mandatory at the HC.*

3.2.6.2. *Enterprise APs much have highest throughput, supporting both EDCF and HCF clients.*

3.2.6.3. *proposing a new EDCF-RR mechanism to set up a session. Inactive stations are dropped from polling list, and are restored to polling list when an EDCF-RR frame is*

received. RR function uses top-priority frame. In Document 02/525r1.

3.2.6.4. Proposes a Persistence Factor for EDCF clients, in document 409r1.

3.2.6.5. Discussion

3.2.6.5.1. None

3.3. Final Discussion

3.3.1. Any papers to present first thing tomorrow?

3.3.1.1. Srini,

3.4. Recess at 9:30PM

4. Wednesday Afternoon, November 13, 2002

4.1. Opening

4.1.1. The meeting is called to order at 1:00PM by John Fakatselis

4.1.2. Discussion

4.1.2.1. How many papers and presenters are in the room? 1

4.2. Presentation of Papers

4.2.1. Document 741r0, "Changes to draft to make the action frames conformant with the formats defined by TGh". Srini Kandala

4.2.1.1. The description of action frames is gone. Remaining are Action Category, Action Code, and Action Details.

4.2.1.2. If an action frame is received for which the action is not defined, the MSB is masked and sent back as an error. Thus there are only 128 available.

4.2.1.3. The chair moves to Harry Worstell

4.2.1.4. Motion: Instruct the editor to incorporate the draft changes in 02/741r1 into the next TGe draft

4.2.1.4.1. Moved Srini K

4.2.1.4.2. Second David H

4.2.1.4.3. Discussion

4.2.1.4.3.1. None

4.2.1.4.4. Vote: passes 45 : 0 : 6

4.2.1.5. The chair returns to John Fakatselis

4.3. Straw Polls

4.3.1. Would you vote No if the draft specifies the following combination of options:

4.3.1.1. EDCF and point coordinated support are both optional

4.3.1.2. EDCF is mandatory, point coordinated is optional

4.3.1.3. Support for both EDCF and point coordinated is mandatory.

4.3.2. Discussion

4.3.2.1. There are 4 possibilities. There should be an option of PC mandatory and EDCF options.

4.3.2.2. We need to include options for Yes votes as well as the Yes Votes. We need to know if we have 75%.

4.3.2.3. The poller wants to find you what people cannot live with.

4.3.2.4. Voters would support mandatory at the HC and optional at the client.

4.3.2.5. This straw poll is for those who will have voting rights on a letter ballot after this meeting.

4.3.3. Straw Poll: Would you vote No if the draft specifies the following combination of options:

4.3.3.1. EDCF and point coordinated support are both optional: 47

4.3.3.2. EDCF is mandatory, point coordinated is optional: 32

4.3.3.3. EDCF is optional, point coordinated is mandatory: 47

4.3.3.4. Support for both EDCF and point coordinated is mandatory: 26

4.3.3.5. Number of voters: 95

4.3.4. Discussion on the Straw Poll results

4.3.4.1. Discussion on EDCF and point coordinated support are both optional:

4.3.4.1.1. This is really moot – any of these options will get out a standard. We support any of these options.

4.3.4.1.2. The problem with this is at the sponsor level, there will be others that don't recognize that we were in an impasse. They would have a problem approving something that allows incompatible but conformant implementations.

4.3.4.2. Discussion on EDCF is mandatory, point coordinated is optional.

4.3.4.2.1. If EDCF is mandatory and PC is optional, the market will sort it out. It allows a fast and easy solution first, and a more efficient solution later with the PC.

4.3.4.2.2. Not a problem with EDCF being mandatory – only legacy nodes are disadvantaged.

4.3.4.3. Discussion on EDCF is optional, point coordinated is mandatory

4.3.4.3.1. It was a good idea to see all the options. It is not really a good option.

4.3.4.3.2. You cant have an HCF without the EDCF. There are still problems to be solved with overlapping BSS to use only point coordinated.

4.3.4.4. Discussion on both EDCF and point coordinated is mandatory.

4.3.4.4.1.   *It allows any user to work with any AP, and allows any service provider to give them service.*

4.3.4.4.2.   *EDCF provides all the QoS we need. There is extra complexity in point coordinators.*

4.3.5.   Re-taking the straw Poll: Would you vote No if the draft specifies the following combination of options:

4.3.5.1.   *EDCF and point coordinated support are both optional: 44*

4.3.5.2.   *EDCF is mandatory, point coordinated is optional: 40*

4.3.5.3.   *EDCF is optional, point coordinated is mandatory: 52*

4.3.5.4.   *Support for both EDCF and point coordinated is mandatory: 27*

4.3.5.5.   *Number of voters: 95*

4.3.6.   Discussion

4.3.6.1.   *Even though none of these gets 75%, we should concentrate on improving the 3rd option.*

4.3.7.   Straw Poll: Would you vote No if the draft specifies the following combination of options:

4.3.7.1.   *EDCF and point coordinated support are mandatory at AP and optional at STA: 35*

4.3.7.2.   *EDCF and PC are mandatory at the STA and optional at the AP: 63*

4.3.7.3.   *EDCF and PC are mandatory at both STA and AP: 30*

4.3.7.4.   *Number of voters: 100*

4.3.8.   Straw Poll: Would you vote No if the draft specifies the following combination of options:

4.3.8.1.   *EDCF is mandatory and point coordinated support is mandatory at AP and optional at STA: 34*

4.3.8.2.   *EDCF is mandatory and PC is mandatory at the STA and optional at the AP: 67*

4.3.8.3.   *EDCF is mandatory and PC is mandatory at both STA and AP: 36*

4.3.8.4.   *Number of voters: 98*

4.3.9.   15 minute recess

4.3.10.   Comments from the chair

4.3.10.1.   *We just can't get to the next step after 3 years. In order to have a coherent draft, we have to come to terms with these issues in the straw polls. There is not an obvious path to a 75% acceptance.*

4.3.10.2.   *The chair has been laid back and leaving decisions and compromises to the group. Now trying to be more aggressive, and do the job of leading the task group. Will try to exercise the position of the chair to lead the group to a conclusion.*

4.3.10.3. *All the options we have tried to achieve consensus have failed.*

4.3.10.4. *We need to close on this contentious issue this week. We will choose one way, and the chair asks for the support of the group.*

4.3.10.5. *Members have asked to make motions to dissolve the task group. Before we get to that point, we will make a proposal and an attempt to solve this issue.*

4.3.10.6. *Starting tomorrow morning, we will have a down selection process without necessarily following the 75% rule. The chair will consult with CAC members to define the process.*

4.3.10.7. *The process will include the straw poll options that were presented here. At the end of the tomorrow, we will get down to one. That one will be brought to the group and try for a 75% approval to go to letter ballot.*

4.3.11. Discussion

4.3.11.1. *Please explain what is meant by down-selection. It could be feature by feature, or all possible permutations of features. The vote shows the most favorable option requires both.*

4.3.11.2. *The options for down-selection are the items from the straw polls today, nothing more. If we select one, we are likely to reach 75%.*

4.3.11.3. *In the event there is a compromise during the break, could we entertain a straw poll to break the logjam after the break? Yes – but we are not looking for nit-picking permutations. Come 3:30, if we don't have a concept with 75% approval, we will go with the down-selection process.*

4.3.11.4. *The chair asks for support of the body in this direction.*

4.3.12. Recess until 3:30PM

4.3.13. Call to order at 3:40PM

4.4. Comments from the chair

4.4.1.1. *We had a meeting to confer with Excom members, and briefed them on the plan and proposal.*

4.4.1.2. *Options are either to split the PAR, rescind the PAR, or downselection. Only the last option was even slightly acceptable.*

4.4.1.3. *The process will be similar to what was done in TGg and TGh. The difficult task will be to define the options for the down selection process.*

4.4.1.4. *Are there any proposals for ways to get us there sooner?*

4.5. Straw Polls

4.5.1. Background

4.5.1.1. *In Monterey we had a draft with well over 75% support. The issue of mandatory or optional polling was not specified. It said the HC was required to recognize the signaling in at TSPEC, but was never required to grant one.*

4.5.1.2. *This straw poll will try to better clarify what is meant by mandatory and optional.*

4.5.2. Straw Poll proposal

4.5.2.1.

4.5.3. Discussion

4.5.3.1. *The current status of draft 3.3 is that the HC is never required to actually grant a TSPEC but it recognizes the signaling.*

4.5.3.2. *Assume that the PICS is the way you want it to be.*

4.5.3.3. *Doesn't think that this question gets us anywhere. We agree that we are not forwarding a draft to LB without a PICS.*

4.5.3.4. *Lets assume that it has your personal "dream PICS". Agnostic to the issue of polling, how many want to go to letter ballot?*

4.5.3.5. *What we want to find out is if there is support for the draft, independent of the polling behavior. Next, we need to find what the polling behavior actually means to the body.*

4.5.3.6. *We need to separate the issue of the polling mechanism*

4.5.3.7. *We are assuming that the polling issue is resolved.*

4.5.3.8. *Clarify what's optional and mandatory? That's why we are taking the straw poll, because the body has different interpretation.*

4.5.4. Straw Poll

4.5.4.1. *How many thing that in draft 3.3, the current polling behavior implies a mandatory scheduler? (not rejecting TSPEC)   32 yes ; 41 no ; 28 abstain*

4.5.5. Discussion

4.5.5.1. *This question is in conflict with what we define as the mandatory polling behavior*

4.5.5.2. *We believe that the current TSPEC*

4.5.6. Straw Poll

4.5.6.1. *Do you think the polling behavior implies HC need never grant a TSPEC?   59 yes, 13 no, 33 abstain*

4.5.7. Discussion

4.5.7.1. *Abstaining means abstaining from the question, not the LB.*

4.5.7.2.   *A 100% vote would be interpreted in light of the last two poll questions. .*

4.5.8. Straw Poll

4.5.8.1.   *How will you vote on whether to go to letter ballot this week if the polling status is unchanged from draft 3.3? (as approved in Monterey) (absent of other objections, assuming this all other issues are resolved) : Yes 73, No 8, Abstain 23*

4.5.8.2.   *Total number of voters in the room: 107*

4.5.9. Discussion

4.5.9.1.   *Does that mean we have a good draft and we don't know about it?*

4.5.9.2.   *Why are we debating if we have something that is already acceptable?*

4.5.9.3.   *In a previous straw poll, mandatory at the AP means you have to respond to a TSPEC, but you can respond by not admitting it? Are we saying a station has to generate TSPECs?*

4.5.9.4.   *According to the draft, it says the HC need never grant a TSPEC. It also means a station might never ask for one.*

4.5.9.5.   *The previous 3 straw polls did not speak to the PICS. Wants to see if what we did still holds with a PICS.*

4.5.9.6.   *Needs to understand what Mandatory means. You must receive the TSPEC, but not grant it. It is up to the interpretation of the reader.*

4.5.9.7.   *Is there a single paragraph we can look at? Not really.*

4.5.10. Straw Poll

4.5.10.1.   *How will you vote on whether to go to letter ballot this week if the polling status is unchanged from draft 3.3 (as approved in Monterey) absent other objections, and the PICS reflects that both EDCF and Polled Access are Mandatory? 79 yes, 13 no, 11 abstain.*

4.5.10.2.   *Count of voters in the room: 108*

4.5.11. Discussion

4.5.11.1.   *Did we miss something on this that is not obvious? Do not need to go through a down-selection process, and go ahead with drafting draft 3.4?*

4.5.11.2.   *We are assuming that these straw polls are conclusive.*

4.5.11.3.   *Concerned about how much confusion there is with what the draft actually means? If we accept the grammar, but don't accept the TSPEC, why is it mandatory? If we don't agree on what it means, how do we expect the world who implements it to agree?*

4.5.11.4.   We have clarified that the draft 3.3 does indicate that EDCF and polled access are mandatory. The issue is not mandatory vs. optional polled access.

4.5.11.5.   What is required to go to LB is a complete draft. We may want more "crispness" later. As long as there is a PICS we can go to LB.

4.5.11.6.   Encouraged by the results, but concerned that some still want to vote no. We need to talk to others outside this room about the result. The mode of support within this room is for an optional behavior where a TSPEC is not necessarily granted. We may have to make that behavior explicit at some point. Encourages everyone to vote yes so we can get to recirculation ballot.

4.5.11.7.   The draft is more precise than it might appear. It is impossible to always grant a TSPEC. There is no way to distinguish lack of resources from lack of implementation.

4.5.11.8.   The first poll was how we interpret a mandatory scheduler. There is a huge discrepancy. We have to come to an agreement. Some may find out that it means is not what they thought, they might change their vote to a No.

4.5.11.9.   Agrees that there are areas where the draft is ambiguous. We are working on these areas. We have had motions this week to fix some of them. Encourages members to make presentations, or send email to the editor, on any ambiguities.

4.5.11.10.   Based on the earlier straw polls, every TSPEC could be rejected. So it is in effect optional. We still need to specify how many TSPECS to accept and of what type. That is more of a job for the certification body, not the standard. It is good that every node understands the signaling. We need to also include EDCF into the centralized signaling.

4.5.11.11.   The chair would like the 13 people who voted No on the last straw poll to come forward with specific objections and say what needs to be improved in the draft.

4.5.11.12.   We need to fix what is in the draft and what is not. We need to include PICS in the current draft. That would address many of the issues. We need to understand what can be in the draft, and what can be tested. Signaling is testable. What if a devices admits no TSPECS. That is a valid behavior.

4.5.11.13.   There are concerns about when a TSPEC will be offered in response to a request. It is fair to leave that to WiFi Alliance. Would like to see the draft to be more explicit on what is required. We need to communicate with WiFi Alliance to make it easier for the customer to understand.

4.5.11.14.   The chair ask for any other papers that need to be presented this week?

4.5.11.14.1.   Menzo: One Paper, with a motion.

4.5.11.14.2.   Keith:

4.5.11.14.3.   Mathilde:

4.5.11.15.   How are we going to get a PICS statement for the draft? Can we form an Ad Hoc group to create a PICS.

4.6. Discussion on the PICS

4.6.1.1.   Who wants to participate on the PICS?

4.6.1.1.1.   Matthew, Sid, Amjad, Mark, Javier, Isaac, Duncan. Peter will lead the group.

4.6.1.2.   The document is done, the group will review it. Peter will bring it back to the chair. Put it on the server tonight.

4.6.1.3.   We will vote on it tomorrow.

4.7. General discussion

4.7.1.1.   We need to approve a draft with 75%. Then we have to decide it is ready to send to a letter ballot with another vote of 50%. The letter ballot needs to pass with 75% to go to recirculation. That will freeze the baseline, and voters cannot change from Yes to No.

4.7.1.2.   The chair suggest that the best way to feed back is not to vote No, but to vote Yes with comments. The chair commits to process all comments whether they come with a Yes vote or a No Vote.

4.7.2. Overview of the draft status

4.7.2.1.   Planning to have an update in the next hour, and publish version 3.3.1 tonight.

4.7.2.2.   There will be only 3 motions tomorrow, so one hour of work will allow us to meet the 4 hour rule.

4.7.2.3.   We have seen 3 versions of the PICS. It is ready to adopt.

4.8. Presentation of Papers

4.8.1. Document 763r0, "TGe request to ANA", Srini Kandala

4.8.1.1.   We need some capability information bit and elements for the draft.

4.8.1.2.   Capability Bit for APSD, IDs for schedule, APSD, and Random data

4.8.1.3.   Would like the Schedule ID of 15

4.8.1.4.   Motion: to request ANA to assign capability bit for APSD mode and IE number for Schedule (preferably with a value of 15), APSD and Random data elements.

4.8.1.4.1.   Moved Srini K

4.8.1.4.2.   Discussion

4.8.1.4.2.1.   Do we have any free capability bits? Yes

4.8.1.4.3.   Second Sid S

4.8.1.4.4. *Vote: motion adopted unanimously without objection.*

4.9. Closing Discussion

4.9.1.1. *The chair notes that in the previously described process, TGe does not issue the Letter Ballot, but it must be approved by the Working Group.*

4.9.1.2. *Any objection to recess? None*

4.10. Recess at 5:05PM

5. Thursday Morning, November 14, 2002

5.1. Opening

5.1.1. **The meeting is called to order by John Fakatselis at 8:00AM.**

5.1.2. **Remarks**

5.1.2.1. *We will continue with technical papers and motions on the draft.*

5.1.2.2. *We will have special orders at 7:00PM tonight.*

5.1.2.3. *Paper 769 on the PICS is now available for review.*

5.1.2.4. *Draft 3.3.1 is available on the server*

5.2. Presentation of Papers

5.2.1. **Discussion on previous paper 02/705r0.**

5.2.1.1. *There was a motion that adopted normative and informative text. The editor discovered some problems with the language. We have created new text with editorial changes.*

5.2.2. **Presentation of modified editing instructions in document 02/766r0 (Keith Amman)**

5.2.2.1. *There is nothing different between this and the discussed modification – revision marks have been turned off.*

5.2.2.2. *(discussion of wording and the potential for letter ballot comments)*

5.2.2.3. *This new text is not perfect, but is better than it was before.*

5.2.2.4. *The working is just cleaned up, but the intent is not changed.*

5.2.2.5. *The minimum service interval is not there. It was not in the original text. It is still an open issue, since adding it would be a technical change.*

5.2.2.6. *(real-time wordsmithing)*

5.2.2.7. *Modifications are in document 766r1*

5.2.2.8.   The chair notes that the 4 hour rule is being relaxed to allow us to make progress. If anyone feels documents have not been available long enough, they should bring it up to the chair now.

5.2.2.9.   Move to adopt the text and editing instruction as specified in 02/766r1 into the 802.11e draft

5.2.2.9.1.   Keith / Srini

5.2.2.9.2.   The motion is passed unanimously without objection

5.2.3.   Document 02/768r0 "EDCF Post-Self-NAV and PIFS Retries – Simulations", (Menzo Wentink)

5.2.3.1.   Post-Self-nav – prevents a node from immediately contending after a TXOP. It allows synchronizing the scheduling order.

5.2.3.2.   A second mechanism is to allow PIFS retries inside a NAV protected contention TXOP. The HC can retry. When a contention TXOP is NAV protected from RTS/CTS, the same mechanism of PIFS retry could be used by a station.

5.2.3.3.   Simulation results from NS with 802.11a

5.2.3.4.   Discussion

5.2.3.4.1.   Why do this? It preserves the scheduling order. A random backoff gives a random order, but short term fairness is better preserved this way.

5.2.3.4.2.   This does not require counting transmission, but is just a duration in the NAV.

5.2.3.4.3.   Could you provide sample distribution functions over time? OK

5.2.3.4.4.   Isn't the RTS/CTS usage, similar to a poll? Yes.

5.2.3.4.5.   Was this simulated for low-latency voice applications? No, there was no time.

5.2.3.4.6.   Do all stations have the same post-self-nav value? Yes, if the value comes from the beacon. That is the only mechanism currently available. All stations for a given class will have the same value.

5.2.3.4.7.   This is a very good way to reduce contention.

5.2.3.4.8.   Were there any comparative simulations without this feature enabled? They were done, but they are not in the presentation.

5.2.3.4.9.   A video queue could be for 3 contenders, and another queue for one contender only.

5.2.3.4.10.   Isn't there already a CBR stream facility in the draft? You could do this now, but it needs to be mandatory for all stations.

5.2.3.4.11.   There is no other way to achieve a constant bit rate stream? Yes there are.

5.2.3.4.12.   Stations could do this themselves, they could figure out the parameter themselves. Yes, but a centralized controller is still needed for admission control.

5.2.3.4.13.   *Do you use the same access category for all three streams? Yes.*

5.2.3.4.14.   *SDTV is CWMIN=0 and CWmax=1. Legacy CWMAX is 1023*

5.2.3.4.15.   *How does this work with DLP? If you don't have an AP involved? It is the same – you still have a TXOP. You do know what the minimum link rate should be from WiFi requirements. You can guess what the time requirement is.*

5.2.3.4.16.   *If the post-nav doesn't change very often, why not put it in the beacon? That's OK.*

5.2.3.4.17.   *What happens if two video streams come from the same source?*

5.2.3.4.18.   *This would be effective with low CWmin. It is a good idea for voice and video, with synchronized flows.*

5.2.3.4.19.   *Likes the scheme for increasing efficiency. How to arrive at the value and distribute it? We should explore independently. Yes – the current text puts it in the beacon, but we can explore others later.*

5.2.3.5.   *Motion to adopt the normative text from document 02/767r0, for Post-Self-Nav and PIFS retries inside NAV protected contended TXOPs.*

5.2.3.5.1.   *Moved Menzo W.*

5.2.3.5.2.   *Second Wim*

5.2.3.5.3.   *No further discussion – the question is called.*

5.2.3.5.4.   *Vote: Fails 21 : 21 : 13*

5.2.4.   **Document 760r0 "Normative Text for EDCF-RR", Mathilde Benveniste.**

5.2.4.1.   *We have HCF polling – we set up a stream for the duration.*

5.2.4.2.   *Short inactivity timer drops inactive station from polling list. Receipt of EDCF-RR frame causes AP to resume Polling of station.*

5.2.4.3.   *RR function is provided by QoS Null frame.*

5.2.4.4.   *Suggested persistence factor of 0.5.*

5.2.4.5.   *Normative text in 02/760*

5.2.4.6.   *Reintroduce persistence factor in 409r2, with simulations in 594r0.*

5.2.4.7.   *Review of simulation results.*

5.2.5.   **Document 409r2 "Persistence Factors in EDCF", Mathilde Benveniste**

5.2.5.1.   *To re-introduce the persistence factor in simpler form.*

5.2.5.2.   *Persistence factor needed to have differentiation of classes above best effort.*

5.2.5.3.   *Leads to a reduction of delay and jitter.*

5.2.5.4.   *New proposal uses same random number generator as already exists. Simpler computation requirement.*

       5.2.5.5.   *Discussion*

          5.2.5.5.1.   *None*

       5.2.5.6.   *Move to adopt into the TGe draft the text and editing instructions as specified in document 01/409r2 and document 02/760*

          5.2.5.6.1.   *Moved Mathilde*

          5.2.5.6.2.   *Second Peter J*

          5.2.5.6.3.   *Vote on the motion: Fails 7 : 16 : 28*

5.2.6.   Recess at 10:00AM

5.2.7.   The meeting is called to order at 10:30AM

5.2.8.   Discussion

       5.2.8.1.   *Are there any additional papers to be brought forward? None*

       5.2.8.2.   *Are there any more motions? None*

       5.2.8.3.   *There are requests for straw polls – to be done after paper presentations.*

       5.2.8.4.

5.3. Presentation of Papers

5.3.1.   Document 769, "Proposed PICS for 802.11e", Srini Kandala

          5.3.1.1.1.   *Contention-based and parameterized access is mandatory*

          5.3.1.1.2.   *Discussion of QoS specific fields that are mandatory.*

       5.3.1.2.   *Discussion*

          5.3.1.2.1.   *Should the schedule function be for the AP, not the station? We might*

          5.3.1.2.2.   *Should we make the names consistent with the draft in 9.1.3 – contention based or controlled access, rather than EDCF and parameterized.*

          5.3.1.2.3.   *We should allow the editor to use his discretion to make it clear to the readers.*

       5.3.1.3.   *Move to instruct the editor to incorporate the text in 02/769r1 into the next TGe draft*

          5.3.1.3.1.   *Moved Srini*

          5.3.1.3.2.   *Discussion*

             5.3.1.3.2.1.   *There is concern that some of the items that are mandatory may have to be optional at the station.*

             5.3.1.3.2.2.   *Would like the ability to make a station and not have to implement all the HCF. TSPEC is OK, since you can reject the service. We need to delay this decision until this evening.*

             5.3.1.3.2.3.   *The problem with waiting is we can't get the draft out.*

5.3.1.3.2.4. The outcome yesterday was that the draft does not make HCF mandatory. Where does that become visible in the PICS?

5.3.1.3.2.5. The PICS references specific clauses that are mandatory. The PICS says mandatory, but the text doesn't require you ever admit a TSPEC.

5.3.1.3.2.6. If this isn't perfect, we can tweak it in the letter ballot. In the interest of moving forward, we should defer to that.

5.3.1.3.2.7. Potential solution – have a very explicit statement that says you are compliant if you accept TSPEC and reject them.

5.3.1.3.2.8. Yesterday we had a straw poll that showed that we needed this PICS with the current draft standard. There was enough flexibility in the draft text. That is what has been done. There is no intention to circumvent the desire of the group in the polling.

5.3.1.3.2.9. The chair notes that any potential no-voters should state their objections at this point.

5.3.1.3.2.10. Shares the concerns that have been raised. Concerned that we are not carefully specifying what is mandatory and required. Recommends that we decide once and for all what is required – maybe in WECA in the form of profiles. We should not be vague on this subject.

5.3.1.3.2.11. People voted on the right to consider what this spec means, and come back with a view next time. This puts the spec under change control. We need to move forward.

5.3.1.3.2.12. Concern that proceeding now will cause us to not meet the 75% mark. Wants to follow the spirit of what we did yesterday, to allow an interpretation that satisfies the group. We need to make that more clear. We need to really know what is mandatory and what is not.

5.3.1.3.2.13. The straw poll was clear. We have greater than 75% support, and this PICS represents that.

5.3.1.3.3. *Straw Poll – Who would vote in favor of this motion as presented? 43 yes, 8 no, 10 abstain.*

5.3.1.3.4. *Discussion*

5.3.1.3.4.1. The chair ask that out of the 8, we would like to hear any additional arguments or issues.

5.3.1.3.4.2. We need more time for consideration. We talked about leaving the draft as it was. HCF was mandatory, but it means you don't have to admit a TSPEC. This PICS was written with both optional. We need to make sure it still makes sense.

5.3.1.3.4.3.   Why can we write down the interpretation into the document?

5.3.1.3.4.4.   The chair suggests a recess to give the 8 objectors to gather with those that drafted the PICS to see if there is a way to alleviate the concerns. Wants to avoid the obstructionist techniques. We've got to move to a constructive mode. There is still an attitude trying to block progress.

5.3.1.3.4.5.   Suggestion for a new straw poll – on people's vote on a LB.

5.3.1.3.4.6.   In order to minimize the risk of missing the LB, lets vote this in now. We will meet with the objectors, and re-consider if necessary. With the understanding that all parties will vote yes on the reconsidered PICS.

5.3.1.3.4.7.   Now there are more sections in the PICS that need closer examination to insure the interpretation of rejecting all TSPECs is still allowed.

5.3.1.3.4.8.   We don't need to go back to the straw polls yesterday. We agreed that the language of the draft is OK, and the PICS is OK. This PICS is a good faith effort to represent the views of the group.

5.3.1.3.4.9.   Only one straw poll had enough support – mandatory / mandatory. Some people are comfortable with lack of clarity, and some are not. Not everyone agreed with the mandatory / mandatory PICS. The level of non-acceptance may be irreducible.

5.3.1.3.4.10.   We did discuss this yesterday. The ad-hoc PICS group put forward an open request for participation. The people who object did not participate. Would like to set a time to vote on the PICS this afternoon. We should recess and then have a discussion to resolve the issues.

5.3.1.3.4.11.   Has no objection to the PICS, but objects to the vague text that it points to. Happy to vote for the PICS as it is.

5.3.1.3.4.12.   It was suggested that some standards deliberately are unclear. Those are bad standards. It is never good to invite confusion. We should be explicit.

5.3.1.3.4.13.   Straw polls showed best support for mandatory / mandatory, but it was contingent on what mandatory meant. The expectation is that an AP can refuse to admit a TSPEC. To get this approved, that's what it has to say.

5.3.1.3.4.14.   The best interest of everyone is to move this forward. We need to get the people with issues together.

5.3.1.3.4.15.   Some people who voted yes yesterday want to change to a No based on this PICS.

5.3.1.3.4.16.   Making it vague doesn't help. That is a bad standard.

5.3.1.3.4.17.   If we try to sweep this under the rug, at some point somebody will say it is not acceptable.

5.3.1.3.4.18.   Tempted to move to disband the group. We're just wasting time. The polls show that mandatory TSPEC won't pass.

5.3.1.3.4.19.   We have tried to make TSPEC optional, and it fails.

5.3.1.3.4.20.   There are many types of schedulers that are possible. Sometime vagueness is appropriate.

5.3.1.3.4.21.   There is difference between vague and out of scope.

5.3.1.3.4.22.   Suggest to recess and discuss.

5.3.1.3.4.23.   The chair states that this discussion is taking us downhill.

5.3.1.3.4.24.   The chair would like to give some time for the people with the problems to have private time. We might be dealing with semantics here. There is misinterpretation of mandatory. We might need to change the text – so go discuss and come back with suggestions.

5.3.1.3.4.25.   First have the motion seconded, then postpone the motion to a specific time.

5.3.1.3.5.   *Motion Seconded Peter J*

5.3.1.3.6.   *Move to postpone this motion until 4:00PM*

5.3.1.3.6.1.   Moved John K

5.3.1.3.6.2.   Second Harry W

5.3.1.3.6.3.   Discussion

5.3.1.3.6.3.1.   Against 3:30 is ample time.

5.3.1.3.6.3.2.   In favor – we need the time

5.3.1.3.6.3.3.   Motion to amend to "3:30PM" (Mike / Matthew)

5.3.1.3.6.3.4.   Call the question on the motion to amend – no objection

5.3.1.3.6.3.5.   Vote on motion to amend: passes 26 : 3 : 12.

5.3.1.3.6.3.6.

5.3.1.4.   *Recess until 3:30*

6. Thursday Afternoon, November 14, 2002

6.1. Opening

6.1.1. The meeting is called to order at 3:30 by John Fakatselis

6.1.2. Discussion

6.1.2.1. *We are giving an opportunity for those with objections*

6.1.2.2. *The chair apologizes if anyone was offended in the suggested procedures, or trying to get those who voted "no" to explain their position.*

6.1.2.3. *There was an ad-hoc meeting on the subject of the PICS. They have found a way forward. The PICS table will stay as presented, but there will be a change to the draft proposed.*

6.1.2.4. *The process we will follow is this. We have a motion on the table on the PICS. We will have a motion to table it to allow changes to the draft. After we discuss the changes to the draft, we will bring back the PICS motion from the table.*

6.1.2.5. *Could there be another way to do this? Yes, but lets stick with the chairs plan.*

6.2. Discussion on the Draft and PICS

6.2.1. Motion on the floor:

6.2.1.1. *Move to postpone this motion until 3:30PM*

6.2.1.2. *Since we are past that time, this motion is out of order.*

6.2.2. Motion on the floor:

6.2.2.1. *Move to instruct the editor to incorporate the text in 02/769r1 into the next TGe draft*

6.2.2.1.1. *Moved Srini*

6.2.2.1.2. *Second Peter J*

6.2.2.2. *Move to table this motion*

6.2.2.2.1. *Moved Peter J*

6.2.2.2.2. *Second Srini*

6.2.2.2.3. *The motion to table is passed with no objection.*

6.2.3. Motions on the draft

6.2.3.1. *Move to make clause 9.10.2.4.2 normative and replace the first paragraph in clause with: "Admission control, in general, depends on vendors' implementation of the scheduler, available channel capacity, link conditions, retransmission limits, and the scheduling requirements of a given TSPEC. All of these criteria affect the admissibility of a given TSPEC; any TSPEC may be rejected. If the HC has admitted no TSPECs that require polling, it may not find it necessary to perform the scheduler or related HC functions."*

6.2.3.1.1. *Moved Keith A*

6.2.3.1.2.   *Second Srini K*

6.2.3.1.3.   *Discussion*

6.2.3.1.3.1.   The new text is compared with the original text.

6.2.3.1.3.2.   The condition that has been added is "If the HC has admitted no TSPECs that require polling, it may not find it necessary to perform the scheduler or related HC functions."

6.2.3.1.3.3.   Strongly encourages everyone to support this.

6.2.3.1.3.4.   So this means that HCF polling is not mandatory at the AP.

6.2.3.1.3.5.   Call the question (John K / Srini) Question called without objection

6.2.3.1.4.   *Vote: Passes 87 : 1 : 8*

6.2.4.   Motions on the PICS

6.2.4.1.   *Motion to remove the PICS motion from the table*

6.2.4.1.1.   *Moved Peter J*

6.2.4.1.2.   *Second John K*

6.2.4.1.3.   *The motion passes without objection*

6.2.4.2.   *Motion on the floor:*

6.2.4.3.   *Move to instruct the editor to incorporate the text in 02/769r1 into the next TGe draft*

6.2.4.3.1.   *Moved Srini*

6.2.4.3.2.   *Second Peter J*

6.2.4.3.3.   *Discussion*

6.2.4.3.3.1.   The only change from what is on the server is the change in QP3. The scheduling generation is only done at the AP.

6.2.4.3.3.2.   Call the question (john / srini) The question is called with no objection

6.2.4.3.3.3.   Point of order: the modified document is not on the server. We don't know what we are voting on.

6.2.4.3.3.4.   Point of information? Is this document the same as we looked at this morning? Yes. There are no changes since the morning session. We made one change, that we just described. In the row QP3, CF14 is replaced with (CF1 & CF14). This was discussed and approved this morning.

6.2.4.3.3.5.   The chair rules that the motion refers to the correct document, which has been discussed since this morning. We will continue with the vote.

6.2.4.3.4.   *Vote: passes 90 : 0 : 8*

6.2.4.4.   *The editor notes that the document 769r1 document was on the server at 12:48PM*

6.2.5. **Comments from the chair**

6.2.5.1. *Is there any protest by anyone on the way the chair handled the procedure on the last two motions?*

6.2.5.1.1. *No protests by anyone.*

6.2.5.2. *Are there any more papers or technical motions regarding the draft?*

6.3. Presentation of Papers

6.3.1. **Document 02/745r0 "Enhancement on Distributed Admission Control", Shugong Xu**

6.3.1.1. *There are several problems with admission control*

6.3.1.2. *Problems in error prone network. Problems with slow start.*

6.3.1.3. *Introducing the Surplus Factor, which is announced by the AP.*

6.3.1.4. *Proposes a rapid-build transmission limit.*

6.3.1.5. *Discussion*

6.3.1.5.1. *Would like to do more simulation on the case where the factor is zero.*

6.3.1.5.2. *Feels this will address potential No votes.*

6.3.1.5.3. *Should we pass a motion on the text at this point? Could the editor incorporate this change in time? He can do it in 5 minutes.*

6.3.1.6. *Move to adopt the normative text in 02/746r0*

6.3.1.6.1. *Moved Shugong X*

6.3.1.6.2. *Second John K*

6.3.1.6.3. *Discussion*

6.3.1.6.3.1. Opposed due to the late stage of the process of the draft.

6.3.1.6.3.2. In favor – it is something that needs to be changed. It is a useful refinement.

6.3.1.6.3.3. For the motion – we need to get work done now, to avoid letter ballots. This fixes something that is broken.

6.3.1.6.3.4. Against this, we need to close the door on new material. But agrees the things that are broken should be fixed.

6.3.1.6.3.5. With the new WG group rules, we now have a path to send a draft to LB after the closing plenary, even if all changes are not in the draft.

6.3.1.6.3.6. Call the question (Duncan / John) The question is called without objection

6.3.1.6.4. *Vote: Passes 30 : 8 : 40*

6.3.2. **Motion on Minimum Service Interval**

6.3.2.1. *Move to include the Minimum Service Interval in the minimum set of TSPEC parameters that must be interpreted*

by the HC (when a scheduler is present), in the appropriate sentence in 9.10.2.4, so that it reads: "These parameters are Mean Data Rate, Nominal MSDU Size, Minimum Service Interval, and at least one of Maximum Service Interval, and at least one of Maximum Service Interval and Delay Bound. All these parameters, shall be non-zero (except for the Minimum Service Interval) in the AddTS QoS Action Response frame when a stream is admitted"

6.3.2.1.1.   Moved John K

6.3.2.1.2.   Second Srini

6.3.2.1.3.   Discussion

6.3.2.1.3.1.   Not sure what this motion does – need more time to consider.

6.3.2.1.3.2.   Without this motion, power management cannot work with polled access.

6.3.2.1.4.   Vote: passes 43 : 14 : 14

6.3.3.   Reconsideration of Motion

6.3.3.1.   Motion to reconsider the motion on Post-Self-NAV and PIFS retries

6.3.3.1.1.   Moved Shugong X

6.3.3.1.2.   Second Frank

6.3.3.1.3.   Discussion

6.3.3.1.3.1.   Two/thirds needed to pass reconsideration.

6.3.3.1.3.2.   At the time was not comfortable. After reviewing the document more, realized that it is useful and will make the EDCF more efficient.

6.3.3.1.3.3.   Uncomfortable with the chair bringing back a motion since there is no new information.

6.3.3.1.3.4.   Couldn't find anything in Roberts Rules about having to have new information.

6.3.3.1.4.   Vote: Fails 31 : 21 : 16

6.3.4.   Are there any other technical motions?

6.3.4.1.   None

6.4. Straw Polls

6.4.1.   Discussion

6.4.1.1.   We are trying to determine if a station can determine in advance if a TSPEC request will be categorically rejected?

6.4.1.2.   We were trying to add a beacon element to identify distributed vs. explicit admission control. You don't need direct information in a beacon because you can get it through a handshake. The extra messages are only happening during a roam.

6.4.1.3. *How does this affect the PICS we just adopted where polled access is mandatory? The draft doesn't require and AP every granting polled access.*

6.4.1.4. *An AP could even advertise polled access and still never grant a TSPEC, and still you couldn't prove it non-compliant.*

6.4.1.5. *How would it be tested. There are many reasons to reject a TSPEC. An AP could implement a "null" scheduler. It would be useful to advise that an AP has a null scheduler.*

6.4.1.6. *Likes the proposal, but searching for alternatives to putting it in the beacon. The could be a potential security risk.*

6.4.1.7. *The question doesn't explicitly require putting it in beacons.*

6.4.1.8. *What if we change it to say "information should be provided that indicates an AP does not offer polled access"?*

6.4.2. Motion to recess

6.4.2.1. *Moved Matthew S*

6.4.2.2. *Second*

6.4.2.3. *Vote: passes 49 : 13 : 1*

6.4.3. Recess at 5:00PM

7. Thursday Evening, November 14, 2002

7.1.1. Secretary for this session: Matt Fischer

7.2. OLD Business

7.2.1. comment resolution

7.2.1.1. *Srini: comment regarding missing state machines for both EDCF and HCF*

7.2.1.2. *Peter: suggests rejecting comment due to lack of provided remedy*

7.2.1.3. *John: any objection to this resolution?*

7.2.1.4. *Andrew: Objects – dangerous, since we could be left with a hole in spec if not addressed*

7.2.1.5. *Peter: change comment resolution to – would consider state machine if "text" provided*

7.2.1.6. *No objection to this resolution*

7.2.2. Motion to accept 02/720r0 as resolution to LB comments

7.2.2.1. *Move to accept 02/720r0 as the group's response to the commenter's request to provide response to the LB39 comments.*

7.2.2.2. *Moved Srini*

7.2.2.3. *second John K.*

7.2.2.4. *vote: passes 30-0-3*

7.2.2.5. *Srini: Do we need to create formal response to the commenters?*

7.2.2.6. *John: Attach doc 02/720r0 to a letter of responses to the commenters*

7.2.2.7. *No objection to this course of action*

7.3. NEW Business

7.3.1. Chair asks for requests to authorize interim sessions for LB comment resolution

7.3.1.1. *Srini: suggests 3-day interim about 1st week of February*

7.3.1.2. *Peter: how long to collate a doc of comments?*

7.3.1.3. *Srini: about one day*

7.3.1.4. *Matt S. difficulty accessing comments last time – requesting a PDF of comments on website as soon as comments compiled*

7.3.1.5. *Srini: believes XCEL is good tool*

7.3.1.6. *Sid: Why are we doing this now, as opposed to January Interim?*

7.3.1.7. *John: Need 30 day notice, plus, easier to authorize from Plenary*

7.3.1.8. *Keith: suggests empowering motion for January interim to create the meeting*

7.3.2. Motion to allow creation of interim meeting after January interim meeting

7.3.2.1. *Move to empower the TG chair to arrange an interim meeting in the first week of February to resolve Letter Ballot Comments remaining from the January meeting.*

7.3.2.2. *Matt S. Are we empowering to have a letter ballot coming out of January meeting?*

7.3.2.3. *Sid: Should we empower chair to arrange the meeting? Who will be in charge of the meeting?*

7.3.2.4. *Moved Srini*

7.3.2.5. *Second Keith*

7.3.2.6. *no discussion*

7.3.2.7. *question called (is there a need to call the question when there is no discussion?)*

7.3.2.8. *Vote: No objection to adoption by unanimous consent*

7.3.3. motion of recognition of chair effort

7.3.3.1. *John K: Move that chair be recognized for his contribution to bringing the group to the point of being able to issue a letter ballot this week*

7.3.3.2. *second: Peter*

7.3.3.3. *applause*

7.4. Recess by default

7.4.1. **no further new business – special orders not yet in effect (time being 7:27PM)**

7.5. Special orders begin 7:30 PM

7.5.1. **special order: Review draft changes and vote to approve or not**

7.5.1.1.   *Chair recognizes Srini*

7.5.1.2.   *Srini: presents review of Draft 3.3.2*

7.5.1.3.   *Chair: Is final draft ready?*

7.5.1.4.   *Srini: need a few more hours to make final draft*

7.5.1.5.   *current document is P802_11E-D3.3.2*

7.5.2. **Motion to instruct editor to create draft 4.0**

7.5.2.1.   *Move to Instruct the editor to create version 4.0 of the 802.11e draft which includes the changes to the draft as decided with the related motions passed by TGe and reflected in the minutes of document 673r0*

7.5.2.2.   *Moved: Peter*

7.5.2.3.   *Second: Duncan*

7.5.2.4.   *Discussion? None-*

7.5.2.5.   *Chair decides to take a vote, in spite of there being no objection to adopt the motion unanimously*

7.5.2.6.   *Vote: passes 48-0-1*

7.5.3. **special order: Vote to forward draft to letter ballot**

7.5.3.1.   *Chair requests a member to move:*

7.5.4. **motion to start a letter ballot**

7.5.4.1.   *Move to recommend to the IEEE802.11 WG to submit Draft version 4.0 for a working group letter ballot on or before November 20, 2002.*

7.5.4.2.   *Moved: John K*

7.5.4.3.   *Second: Duncan*

7.5.4.4.   *Discussion*

7.5.4.4.1.   *Frank H: For – asking for continued spirit of cooperation in continuing work on QOS standard, as is similar to the cooperation that allowed us to get to this point – suggests voting YES with comments, and electing a single NO vote among a group that may have otherwise voted NO, in order to allow the LB to reach a 75% approval*

7.5.4.5.   *Vote: passes 52-0-1*

7.5.5. **motion to adjourn**

7.5.5.1.   *no objection to adjourn*

7.5.5.2.   *adjourned*

IEEE P802.11
Wireless LANs
Title

Date: November 12, 2002

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Abstract

IEEE 802.11 Plenary Session minutes for TGf meeting in Kaua'i November 2002.

1. Meeting called to order at 3:32pm
2. Welcome from Dave Bagby.
3. Agenda
   a. Called to order
   b. Adopt agenda
   c. Look at last set of minutes
   d. Process all received comments
   e. Look at new business
   f. Adjourn
4. Motion to adopt agenda: Moved: Butch A. 2nd Richard Paine Vote: unanimous
5. Matters from the minutes from Sept's minutes
   a. No matters arose from the minutes
   b. Moved to accept the minutes from July, Moved: Butch A. 2nd Jon R.
   c. Vote: unanimous
6. We are to Process all comments received.
   a. 02-659r0 has the original comments
   b. 02-659r1 is an ad-hoc groups suggested remedies
7. Official Ballot Summary
   a. 73 Eligible people in the Sponsor Ballot Pool
      i. 50 affirmative
      ii. 7 negative
      iii. 2 abstention
      iv. 59 votes received = 80% returned, 3% abstention
   b. The 75% affirmation requirement is being met.
      50 affirmative votes
      7 negative
      57 votes = 87 affirmative

8. Start processing comments in 659r1
   a. ID 86 – Request for solid blocks or something to lines
      i. Disposition: accepted and moved to editor to do.
      ii. Approved without objection
   b. ID 31 – Rewrite 802.11f so that IAPP can recover from a failed AP
      i. Disposition: The suggested remedy would require that stat for stations….
      ii. Comment Partially Accepted: without objection
9. Check for first time TGf attendees and or observers: about 6.
   a. As this doc has gone to the sponsor ballot, we really don't "own" this doc anymore, and we need to specifically respond to the ballot comments only, and not look at other areas that may be of interest.
10. Continue Processing Comments
    a. ID 5 – add reference to the Mobile IP doc
       i. Disposition: Accepted add a reference to the MIP doc
       ii. Approved without Objection
    b. ID 6 – Define RADIUS on first usage
       i. Disposition: Accepted
       ii. Approved without Objection
    c. ID 9 – Evolution of the IAPP through multiple versions…
       i. Disposition: OK – Remove the bullet
       ii. Approved without Objection
    d. ID 85 – Figure 1 ambiguous – what are grey blocks
       i. Disposition: OK no change requested. None made. Gray is where there is no connection.
          1. Discussion: question on figure 1 Grey is the separation. Quick straw poll 4-2-6 to add a sentence to the document.
       ii. Approved resolution without Objection
    e. ID 7 – IAPP SAP label add to Figure 1
       i. Disposition: label to be added
       ii. Approved resolution without Objection
    f. ID 71 – Change text to read" present at least three"
       i. Disposition: change sentence to remove the word three
       ii. Approved resolution without Objection
    g. ID 81 -- Clause 2 reference need to be references to the latest version

        i. Disposition: Add a suggested sentence except the word "shall" shall not be used.
        ii. Approved resolution without Objection

h. ID 38 – Specifies IPSEC….
        i. Discussion: Noted a grammatical error on Line 31. 2nd paragraph 4th line section 1.4. The question of listing the usage of IPSEC is not needed. There is a reference in the doc that section. It is the only reference to IPSEC, and only as an Introduction.
        ii. Disposition: Remove unused RFCs from the reference list in 2.0; with this change the list in 1.4 does specify the IPSEC documents are used. Correct the grammar in section 1.4. The portions of IPSEC used are described in the sections of the document where they are referenced. Remove the word IPSEC and instead use ESP with a reference link. This will be changed to make it correct. (See 02/659r2)
        iii. Approved resolution without Objection

i. ID 10 – Standard should be recommended practice
        i. Disposition: OK make the change
        ii. Approved resolution without Objection

j. ID 11 – Four Service Types?
        i. Dispassion: Yes, corrected language
        ii. Approved resolution without Objection

k. ID 12 – Fig. 2 in section 4.   MSC charts need to be added
        i. MSC charts were provided by Terry Cole, as a suggested change to the doc. We need the group to review the charts and come back to this issue after the group has had a chance to review it.

l. ID 88 – No definitions of Types of service primitive arguments
        i. Discussion: This section is not an API, and you don't need to put in the size of the parameters.
        ii. Disposition: This is an abstract interface and not a programming interface- hence the arguments do not have "types" in the sense of the review comment. The comment is declined, as no change was requested.
        iii. Approved resolution without Objection

m. ID 68 – 4.10.2 IAPP-Add.request should be IAPP-Move.indication
        i. Discussion: The AdHoc group noted that it was wrong.
        ii. Disposition: Accepted: correct name was used.
        iii. Approved resolution without Objection

n. ID 23 – 4.10.2 Context block from old to new AP?
        i. Discussion: The AdHoc group remembered that the Context block flowing from old to new be a request from a previous decision.
        ii. Disposition: As it is meant to have it, and the commenter gave that as a possible option, this comment is accepted, but no change was made.
        iii. Approved resolution without Objection

o. ID 90 – 4.2.2 Formal definition of the enumeration of the ….
        i. Discussion: Same misconception that we had with ID 88.
        ii. Disposition: The values are enumerated in the text, the values are not mapped to numbers because this is an abstract. No change requested, Comment is declined.
        iii. Approved resolution without Objection

p. ID 44 – 4.4.2 No need for status in IAPP-Terminate.confirm.
        i. Discussion: The AdHoc suggested decline comment, but requested the TG decide. The TG prefers to be more explicit here – and the feeling that in the future there may be additional values and it would be more difficult to add the parameter later. All the service primitives' speced consistently have a status field and the TG prefers to retain the consistency. Straw poll 4-1 to leave as is. Discussion on why leaving it or changing it may or may not be done.
        ii. Disposition: Declined discussion was used in the disposition above.
        iii. Approved resolution without Objection

q. ID 16 – 4.5.1 – STAs that do not properly reassociate when moving
        i. Discussion: need to clarify the sentence
        ii. Disposition: Change the sentence referenced, and a clarifying change has been made.
        iii. Approved resolution without Objection

r. ID 91 – 4.5.2 – Sequence number issue
        i. Discussion:
        ii. Disposition: The TG recognizes that the seq number mechanism is not perfect, however it is all that 802.11 provides to TGf. To have something better there would have to be a

change to the 802.11 protocol, which TGf is not empowered to do. Also, for the purpose of resolving the problem of rapid reassociation, the sequence number is adequate to the task. The comment is declined, (to the extent that no change was requested). The TG hopes that the explanation provided will help the reviewer understand the reasoning of the TG.

     iii. Approved resolution without Objection

s.   ID 45 – 4.5.2 Sequence number comment (2)
- i. Discussion:
- ii. Disposition: The TG recognizes that the sequence number mechanism….Comment is declined.
- iii. Approved resolution without Objection

t.   ID 72 – 4.5.4 The IAPP Multicast Address is not defined.
- i. Discussion: The WG Chair was asked to get the Multicast addressed, not able to find the address. Robert M checked the IANA website, and noted that only 2 addresses were assigned in 2002. Dave to check with Stuart and see where this is.

u.   ID 30 – 4.5.4 Layer 2 update frame mechanism is unreliable….
- i. Discussion: The AdHoc group suggested declining.   The discussion is that having the L2 packet be sent multiple times rather than only once will have a chance to get a packet through, and allow a packet to be sent from inside the DS back to the STA. Is it better to have the implementer be hinted that there is a problem? Or do we simply leave it as is. A Concern that the STA could be sitting waiting for a packet and the DS would not be able to get it to the STA until the STA sends a packet if the L2 packet is lost. Losing broadcasts in a contention system is a possibility. The Race condition of having the STA is in a roamed silent location that an AP would not hear from the STA.
- ii. Disposition: The reviewer is reminded that L2 is defined to be an unreliable delivery layer. IAPP is designed to support L2 roaming operation and hence the design requirements do not include perfect reliability. Additionally, a "failure" of the L2 update frame is only an issue until the station next sends a packet. The TG thinks that an additional heuristic mechanism is neither needed or appropriate. The comment having been considered, the suggested change is respectfully declined.
- iii. Moved to adopt disposition: Jon R. 2nd Robert M.: 7-2-1 Motion passes.

v.   ID 46 – 4.5.4 Layer 2 update frame issue.
- i. Discussion: The commenter is possibly misinformed on what is happening.
- ii. Disposition: TGf is not performing maintenance of forwarding tables; rather it is causing a specific frame to be issued on the link, which has that effect. The frame is a trigger to invoke the 802.1D actions. Therefore the TG believes that the action being performed is in fact that the…(see comment file)..Partially accepted.
- iii. Approved resolution without Objection.

w.   ID 92 – Replace sequence number…
- i. Disposition: See comment from above (45). Comment declined.
- ii. Approved resolution without Objection.

x.   ID 55 – Sequence numbers may wrap…
- i. Disposition: Comment Accepted, and the text pointed out has been copied from 4.5.2 and used as clarification as requested in 4.7.4
- ii. Approved resolution without Objection

y.   ID 33 – 802.11 specifies that the "old AP" is ….
- i. Discussion: read the full comment…
- ii. Disposition: The situation posed by the reviewer is not possible or desirable…(See comment file.)
- iii. Approved resolution without Objection

z.   ID 43 – 4.8.4 – If update of tables is indeed..
- i. Discussion: There is an error in this clause. The station is not allowed to do a reassociation if he wasn't associated previously to an old AP. The confirmation from the old AP must be received prior to having the L2 frame during the Reassociation process.
- ii. Disposition: Accepted – the correction pointed out has been made in draft 4.1 clause 4.9.3 which is the confirm since one has to wait to send the update frame until after the confirmation from the old AP.
- iii. Approved resolution without Objection

11. Recessed for dinner 5:30   (Target reconvene at 7:00pm)

12. Reconvene 7:03 pm
13. Discussion on the Reassociation process to help Andrew understand the process.
14. Continue Processing Comments
   a. ID 48 4.8.4 AP inform other APs
      i. Disposition: the behaviour in 4.5.4 is there in order to compensate for badly implemented stations that never do reassociation but only do associations. In 4.8.4 we are dealing with reassociations and therefore are talking about correctly implemented stations and so the extra effort was thought not necessary. The additional step requested is therefore declined.
      ii. Approved resolution without Objection.
   b. ID 58 4.9.4 Level 2 update frame…
      i. The Level 2 frame is actually sent by the IAPP entity.
      ii. Resolution: Accepted. See comment file for resolution.
      iii. Approved resolution without Objection.
   c. ID 17 4.9.4
      i. Resolution: Accepted. See comment file for resolution.
      ii. Approved resolution without Objection.
   d. ID 61, 69, 20, 50: Arrow pointing in the wrong direction.
      i. Approved to correct without Objection
   e. ID 60: Comment accepted
      i. Approved to correct without Objection
   f. ID 35: 5.1.2
      i. Discussion: If we remove the pairwise associations, then we need to replace with what? Further discussion about how much detail needed to be stored for how many pairs.
      ii. Disposition: the reviewer should be aware that an AP does not have to maintain a full set of pair wise security association with all other APs in the ESS. The security association is only needed to APs to/from, which a station roams. This is a significantly smaller set of information that does enable the use of the pair wise security associations to scale. Further the document was written explicitly to allow an AP implementation to cache and age security associations to enable an AP vendor to tailor a trade off between performance and cost. The TG believes this is a good design balance for the document and the suggested change is declined.
      iii. Approved resolution without Objection.
   g. ID 76: 5.3.1 "Should register as part of the ESS…"
      i. Discussion: in a recommended practise requires us to use Should not the word shall.
      ii. Partially accepted – because the IEEE editing rules for RP documents state that we cannot use the word "shall" which is reserved for stands documents. So the reviewer is correct…Accept comment partially.
      iii. Approved resolution without Objection.
   h. ID 62: Comment editorial accepted and approved without Objection.
   i. ID 63: Comment needs to be checked out
   j. ID 51: Comment accepted and Approved without Objection
   k. ID 52: Comment Accepted and Approved without Objection
   l. ID 39: 5.4
      i. Discussion: the security issue of when something is trusted and when it is not.
      ii. Disposition: The comment is concerned over what could happen if "the old AP is compromised". The draft is securing the traffic between trusted entities, where the entities are APs. The trust of APs is established when they pass the authentication phase of joining an ESS. It is presumed that APs remain trusted during their operation. If an AP becomes evil during operation, the system has much worse problems that those pointed to in this comment. The fear that some component may be compromised in the future cannot mandate that a component may not be used. If that criteria
      iii. Comment Declined, and Resolution Approved without Objection.
   m. ID 49: 5.5.1
      i. Discussion: It appears that there is a real problem here, and take option 2 that was suggested.
      ii. Disposition: Accept Option 2
      iii. Approved Resolution without Objection.
   n. ID 35: Review the comment again.

      i. The author of the comment requested that we review the resolution that we passed, and walk through the process again. The process of how the Radius Server tracks the info for a pair of pair-wise security.

      ii. Motion to change this back to Ad-Hoc status and have Robert M. review the response, and talk with the Author of the comment.

o. ID 41: 6.4 TCP for Handoffs between APs….

      i. Discussion

      ii. Disposition: The use of TCP in this instance was seriously considered by the TG during the writing of the document. In this instance where it is used, the TG faced the choice of either inventing a new mechanism to reliably exchange the information required or to use an existing mechanism. In the sprit of a RP, the TG decided to use the existing mechanism of TCP as it was well suited to the required task…….Comment Declined.

      iii. Approved Resolution without Objection.

p. ID 70: Comment accepted without Objection.

q. Dave growled at Jon

r. ID 82: IEEE editor asked if the Figures needed permissions etc.

      i. As no Copyright issues were needed, this comment is accepted and no action is needed.

      ii. Approved Resolution without Objection.

s. ID 83: General: IEEE editor requires a mailing address for each member of the working group that worked on the document. This will ensure that all members of the working Group receive a complimentary copy of the standard.

t. ID 84: Accepted: no response required.

u. ID 67: General: Non-responsive Comment.

      i. Non-technical comment that poses no technical change.

      ii. The question is whether this was a person that was trying to stop the process. The TG believes that this comment is not really the appropriate vehicle for the person to express his opinion. Another forum should be used for this type of complaint.

      iii. Comment Declined: the reason being that the comment is non-responsive per the ballot rules. <Reference to be added>. Resolution accepted without Objection.

v. ID 27: General

      i. Discussion: Having RADIUS vs. not. A RP is supposed to recommend something. If it doesn't recommend something, and allow any old thing, then we don't get interoperability.

      ii. Disposition: The logic provided in the comment does not persuade the TG of the reviewer's position. The fear that some component may be compromised in the future cannot mandate that a component not be used. If those criteria were followed, literally nothing could be used since all components "may" be compromised in the future. If RADIUS was not used and instead "any security infrastructure" was used, then the document would not be a recommended practice. It is necessary to recommend some practice and in the case of TGf RADIUS is the recommendation. Comment declined.

      iii. Approved Resolution without Objection.

w. ID 32: General

      i. Discussion: Non-responsive Comment. It doesn't provide a specific change that would allow the vote to be changed. The work asked for was actually already done. TGf has had many meetings with TGi and has received comments from those in TGi that have indicated that TGi would be a potential user of this RP.

      ii. Disposition: long paragraph -- see the Comment file.

      iii. Approved resolution without Objection

x. ID 42: General

      i. Discussion: Non-Responsive Comment. The idea that having more diagrams to help understand the RP is needed. The author was pointed to the MSC diagrams that are being proposed to see if that is sufficient to resolve the comment. If it were, then the comment would be resolved by having the MSC pictures. The reviewer acknowledges that the second part of the "Suggested Remedy" is non-responsive, but would like to look at the MSC diagrams for first part. This comment will be reviewed again after the MSC diagrams are reviewed.

y. ID 47: General

      i. The MSC diagrams will probably help here, leave open till later.

z. ID 26: General

      i. Discussion: The timeout for the move protocol. See 4.9.3 and 4.8. The RP is not to be a Tutorial of how to use 802.11. If there is no association, there is no association.

ii. Disposition: Accepted: the situation described can occur – however there is nothing IAPP can do about this since the actual reassociation action is taking place via the 802.11 protocol. If the AP causes an 802.11 reassoc response to be sent with the status code "Association denied due to in ability to confirm that association exists" (Code #11 table 19 in 802.11) because the IAPP exchanges failed, the Station will have to establish a new Association. An explanation was not added to the IAPP draft as the TGf draft start to become a tutorial on 802.11. Comment accepted with no action needed.

iii. Approved resolution without Objection.

aa. ID 78: General Title page edit. Comment accepted. Comment processed.

bb. ID 80: Updated Copyrighted statement. Comment processed.

cc. ID 79: Comment processed, and accepted

dd. Comments 78-80 were from the IEEE and they were comments for requirements that we had to comply with.

ee. First Pass completed.

15. Comments that have not had Ad-Hoc preview done are left.

16. Discussion on what to look at next. The group decided to look at the MSC diagrams.

a. The group looked at the MSC diagrams that were prepared by Terry Cole.

b. Discussion of which exchanges are describes, and the fact that the AP doesn't describe how the actual authentication is done with the RADIUS server.

c. Authenticators must be able to use the shared secret between the Supplicant and the client.

d. A runner was sent to try to locate Terry Cole, who created the MSC diagrams.

e. The information for what the AP must do to authenticate with the RADIUS server has to be written someplace to allow this operation to take place.

f. There is a RFC for RADIUS, and there is a defined process for getting the shared secret back.

g. What is there is the Client-Server protocol, but what we are talking about is the Client to AP.

h. The Client and the server is a known exchange, other than to give an RFC for example.

17. Terry C. was not available, and the last 45 minutes of time that we have has the following plan to spend our time more informally, and look at the comments that are not currently resolved, and try to be prepared to resolve the issue tomorrow. Dave will prepare a new snapshot of the comments for the group to review.

18. Recessed 8:51

19. Reconvened: Wed 8:10 am

20. Process Comments continues:

a. ID 89: 4.1.2 Shared secret Linkage

i. Discussion: The shared secret referenced refers to ….Radius Shared secret parameters don't necessarily need.. The comment trailed off as the decision was to let Robert M look at it and return to this comment later.

b. ID 8: 4.1.3 Are there preconditions?

i. Discussion: No specific preconditions identified, but the commenter wanted the group to revisit and ensure that there are none.

ii. Disposition: No preconditions identified, no action required.

iii. Approved resolution without Objection.

c. ID 13: 4.1.4 Are there preconditions?

i. Discussion: same question in a different section.

ii. Disposition: same disposition

iii. Approved resolution without Objection.

d. ID 59: 4.10.4 --IAPP-Move.request

i. Discussion: the IAPP-Move.request should indicate the value in old BSSID should be, but in 4.10.4 is not the place to do that, rather the section 4.8.2 has the value. A review of 4.8.2 and 4.10.4 was done to see if the request was reasonable.

ii. Disposition: Declined – in 4.8.4 draft 4, page 13, lines 14&15 the value of the "old AP" is specified. The TG believes that this is what the reviewer referred to as the "OLD BSSID". Since the document already says how to determine the value, the TG believes that no change to the draft is necessary.

iii. Approved resolution without Objection.

e. ID 89: 4.1.2 Shared secret linkage

i. Discussion: in 4.1.2, included in the param list, the RADIUS shared client secret. Is this appropriate as the RADIUS client engine needs this to function, but does it get this as an external entity? Should the shared Secret even be listed here? It should stay within the RADIUS Client code base only. The shared secret would need to be entered into the Shared Secret via the Security Management software entity. The Radius Client key

should only be known to the Security code known. The IAPP initiate is started up each time on boot-up, and as such, having the key entered each time isn't preferred. Is having the Interface defined in this manner the real issue that is maybe misunderstood, and as such the way to get the information to the Security module needs to be described differently. Concern that if we leave it as an undescribed parameter, there will be an interoperability issue. Concern having the Shared secret as a parameter is not a "good" thing either. The application doesn't know the secret; The Secret is only known to the Secret code. Question, does the Security module provide a GUI window? No, but this is something that needs to be provided to create the association. The parameter in this call shouldn't be there, and known to IAPP, it should only be known only to the RADIUS client management interface. But where is the client management interface? Agreed, but the parameter doesn't belong here. (At least one's viewpoint). The RADIUS client doesn't know the shared secret, because it has been mangled by some other entity. The RADIUS Client needs to use the secret to mangle things for the encryption process. There was general principle that ones wants to have the mechanism that consumes the key be the only thing that has access to them, but we are not trying to design the entire access point, but rather to provide pieces that people will be able to build interoperable pieces. All of Clause 4 is a guide to an implementer. It is an abstract interface that describes the high layer to allow clause 5 and 6 to work.   4 is the abstract definition. And section 5 and 6 is a protocol description. The IAPP component has a secret that it is providing to the RADIUS Client, but that seems wrong. If one wants to check the security properties of the client, it becomes a more complex analysis immediately.

    ii. Disposition: remove from 4.1.2 the shared secret from the parameter list, and the paragraph that describes the param: in 5.3 the TG added text to indicate that the radius Client shared secret is needed; but this information is acquired in a different manner.

    iii. Put on hold until Robert M has a chance to provide new text.

f. ID 14: 4.3.3 precondition issue
    i. Discussion: none
    ii. Disposition: Accepted no action needed.
    iii. Approved resolution without Objection.

g. ID 15: 4.3.4 precondition issue
    i. Discussion: none
    ii. Disposition: Accepted no action needed.
    iii. Approved resolution without Objection.

h. ID 19: 4.8.1 – IAPP move.request is described …
    i. Discussion: this is similar to another comment, but on a different clause, editor needs to make the similar change in 4.8.1
    ii. Disposition: Comment Accepted, and text has been corrected.
    iii. Approved resolution without Objection.

i. ID 20: 4.8.2 Timeout parameter
    i. Discussion: Review the page referenced. The move.confirmed is the timeout, and the layer 2 update frame is not relevant to this timeout.
    ii. Disposition: Accepted – The text was corrected.
    iii. Approved resolution without Objection.

j. ID 56: 4.9.2 Old AP field
    i. Discussion: This parameter is critical to the function. You need to make a comparison, and this parameter is how the confirm is connected back to the request. The parameters passed are the old AP, the sequence and the MAC address. The APME that is invoking the move only has the MAC and the OLD AP and the sequence number. It doesn't have the IP address of any of the players.
    ii. Disposition: Declined: The param is present so that it is possible to match confirm to requests – The Old AP is required to do this. There may be multiple outstanding notifies for the same station. The only way to resolve returning move responses is with the OLD AP address at this interface (THE APME does not have the IP address that matches Old AP addresses).
    iii. Approved resolution without Objection.

k. ID 57: New BSSID field
    i. Discussion: Probably has a point, but….as an abstract interface, you may have multiple APS.

        ii. Disposition: Declined: If there were only a single BSSID possible, then the comment would be correct, however, It is possible to have multiple WM interfaces and hence multiple BSSIDs – in this situation, the param is required.

        iii. Approved resolution without Objection.

l. ID 21: 4.9.2 Not Operating

        i. Discussion: If the port is not open, the packet that would cause this status would not arrive.

        ii. Disposition: Accepted Changed as requested.

        iii. Approved resolution without Objection.

m. ID 35: 5.1.2 IPSEC pairwise security association.

        i. Discussion: The issue is does the RADIUS Server have to keep pair-wise secrets. The answer is No. The new AP wants to establish a secure communication with the old AP, then it must go to the RADIUS server and hands it off to the Old AP via the context block, and the only secret that the RADIUS Server keeps is between the RADIUS Server and with each AP. RADIUS Server encrypts the blob to pass to the OLD AP, and then the new AP sends this to the old AP and the blob gets unwrapped and the inner blob gets passed back to the NEW AP as an acknowledgement. IF RADIUS has a thousand clients, then it has a thousand entry database entries. Potentially in a very large network, the RADIUS may not be as easy to manage. Having to manage each entry is a concern. There is a potential manageability problem, but the idea is that there would generally not be a problem.

        ii. Disposition: The reviewer should be aware that an AP does not have to maintain a full set of pairwise security association….See comment file.

        iii. Approved resolution without Objection.

n. ID 89 4.1.2 Shared key Secret

        i. Discussion: To include RADIUS support the server must be set up prior to AP being …..The shared secret has to be managed in 4.5.2, and the recommendation is to strike the reference to Shared secret in 4.1.2. The second paragraph was reviewed also for clarity. No change made.

        ii. Disposition: Accepted: The TG removed from 4.1.2 the shared secret from the param list. The description of the use of the shared secret is in 5.2.

        iii. Approved resolution without Objection.

o. ID 18: 5.2 Level 1 support question

        i. Discussion: The idea is the allowing some folks the path to run the IAPP without security if you want. The commenter points out that the group wanted to have 2 levels of support, but how the doc reads, it is hard to see the two levels of support in all cases. Question to the TG do we believe that a change is required. The DSM IP address is currently being provided by the RADIUS server, so there is a possible problem with supporting level 1. Only level 2 or 3 is easy to identify. IN order to provide the level one support, the parameter description needs to be described for local Address translation and not having RADIUS provided information. For each function, the parameters need to have a description of how to support level 1. The move.request is already written in a manner to support this support. There is not much work to get this done, so the editor will take the action item to correct the incongruities.

        ii. Disposition: Accepted the TG desires to retain the level 1 support and has altered the draft to eliminate the interdependencies that the reviewer pointed out.

        iii. Editor to get back to the group to determine the extent of change for the TG to consider.

p. ID 63 Reference to footnote in table for RADIUS Attribute numbers.

        i. Discussion: The need to get a set of attribute numbers for RADIUS. Numbers were requested from the WG Chair, and they have not been received yet. TG chair to Ping the WG chair about the numbers.

        ii. Disposition: Accepted, the footnote will be corrected when the numbers are received.

        iii. Approved resolution without Objection.

q. ID 64: 5.3.7.2 SHA1 or not SHA1

        i. Discussion: this is a recursive operation, and as you expand to get enough bits to do the operation. First you need a HMAC then ….(secretary missed statement)…. Trying to expand the secret to get enough bits, similar thing that is done with IKE. You can do this 2 to the 80th, and it will be ok, but if you do more than that it would allow the key to be broken. It is not the issue though, how to express the expansion of the key in the text so that someone is able to understand what is being described. The idea is to take a series of blobs that are concatenated, and the content of each blob is the same value until you get

enough bits for the encryption process. This is the same issue as is needed for comment 65 also. Robert M is going to prepare a better equation to put in the text.

　　r.　ID 66. 5.7 Add-Notify
　　　　i.　Discussion: Multicast word is used in 4.5.4, but in 5.7 it says broadcast. 5.7 is incorrect, and it should say multicast. Editing oversight.
　　　　ii.　Disposition: Accepted – the Actual mechanism is the multicast, the sentence pointed out was a hold over from prior drafts – text has been corrected in D4.1.
　　　　iii.　Approved resolution without Objection.
　　s.　ID 64: 5.3.7.2
　　　　i.　Discussion: Jesse W. helped with the new descriptive equation.
　　　　ii.　Disposition: Accepted text has been improved in D4.1
　　　　iii.　Approved resolution without Objection.
　　t.　ID 65: 5.5.1
　　　　i.　Discussion: same issue as 64
　　　　ii.　Disposition: Accepted text has been improved in D4.1
　　　　iii.　Approved resolution without Objection.
　　u.　ID 36: 5.5.1
　　　　i.　Discussion: There was a discussion before, but the commenter didn't feel that the resolution from a previous letter ballot was not sufficient. The previous response was that no change requested, and that another commenter change to the area made the issue unknown. Robert M. to go and look at this and the TG will review it again. Later.
　　v.　ID 53: 6.1.5 Table 7 problem. (Really in 6.1.2)
　　　　i.　Discussion: the table was not in 6.1.5, but was noted in 6.1.2
　　　　ii.　Disposition: Accepted Draft 4.1 contains the correction.
　　　　iii.　Approved resolution without Objection.
　　w.　ID 54: 6.8.16 New BSSID IP address
　　　　i.　Discussion: 4/8 octets in page 36 are different from 4/16 octets described in table 9. That is correct. Ipv6 length address is 128 bits, which is 16 bytes.
　　　　ii.　Disposition: The correct length is 4.16 and has been corrected in the draft.
　　　　iii.　Approved resolution without Objection.
　　x.　ID 73: General: too much overhead.
　　　　i.　Discussion: Not going to result in edits.
　　　　ii.　Disposition: Declined: the suggestion to RARP is not acceptable because APs are not constrained to be on the same sub-net.
　　　　iii.　Approved resolution without Objection.
21.　Recessed at 10:am. To reconvene at 1 pm. We will start with Bob's AI.
22.　Reconvened at 1:00 and the Secretary was late 1:09
　　a.　ID 22:
　　　　i.　Partially accepted See file for disposition
　　　　ii.　Approved resolution without Objection.
　　b.　ID 24: General – Disassociation issue
　　　　i.　Disposition: Accepted: this should have been in 4.10.4 – draft 4.1
　　　　ii.　Approved resolution without Objection
　　c.　ID 36: 5.5.1
　　　　i.　Discussion on RADIUS providing request response, so when the Old AP asked for something, then RADIUS helps assure that the correct info is returned. See figure 3 at the end of section 5.1.2, see the top of page 18 of pdf d4.0. Liveliness question. How can AP1 know that block 5 is live? Where are timestamps explained? 5.5.1 paragraph 4, the center sentence. It explains the algorithm that is being question. The text explained what to do if there wasn't an SA. If it accepts an old SA, it now has the key established for a move that would not match the key in the new AP, and so the communication wills timeout, and so the cases are covered. The real question is what is the Attack you are trying to prevent? Anything protected by old keys would now be compromised. The bottom line is that the request is to always check the timestamp.
　　　　ii.　Disposition: Accepted: Draft 4.1 has been changed to always check the timestamp in the ticket that gets delivered to AP1 in Figure 3. Text was added in 5.5.1 to clarify this.
　　　　iii.　The commenter's alter ego was in the room, and agreed that the resolution was good, but there was some more editing to the response.
　　　　iv.　Approved resolution without Objection. (Last text edits will be done by the editor)
　　d.　ID 25: General comment Timeout question

          i. Discussion: Timeout for the add protocol, may leave the new AP having no idea if the STA has been disassociated from any old AP.Does this matter? No

          ii. Disposition: Accepted: Nope, does not matter because the station gets what it deserved for attempting to use an association for reassociation or this may be the first time and there was no prior association. The TG did not feel it was necessary to explain this in the TGf draft.

         iii. Approved resolution without Objection.

    e. ID 40. 5.5.1 SHA1 or not SHA1

          i. Discussion: Redisplayed the updated algorithm and the current text. Discussion on how to represent the bit order.   Propose that the secret is a 160-bit value in big-endian format with the most significant octet first. There was a problem in the new algorithm diagram that the SHA1 should be HSHA1. If we make it HSHA1 then change to use the null string to be used as the extra parameter that was missing to algorithm.

          ii. Disposition: Each secret is a 160-bit value, in big-endian format. See comment File.

         iii. Approved resolution without Objection.

    f. ID 75: General IAPP forward roaming.

          i. Discussion: 2 comments that are similar. One says that he wants to do forward roaming, and the commenter knows that the fundamental problem is that .11 doesn't give that information at this time. The other comment is comment from Bill Arbough, which shows something similar, and he has a presentation to evaluate. The discussion then provides the background for the request.

23. Presentation from Bill Arbough, 02/758r1

    a. Background of the association process.

    b. Identified Hand-off latencies

    c. Why is this important?

    d. Four IAPP Messages

    e. Experimental Setup

          i. Cisco APs about 2ms

          ii. Soekris about 4 ms

         iii. Ect

    f. APs need to learn about their neighbours

    g. Proactive Caching – The Algorithm

    h. Expected Performance was projected

    i. Improvements with this algorithm

          i. Basic 802.11 reassociation 1.119 ms

          ii. IAPP implemented Reassociation 16.392 ms

         iii. New Algorithm Reassociation. 1.319ms

    j. Comparison with Pre-Auth

    k. Require at least 10 ms in the best case.

    l. Conclusions:

          i. IAPP increases handoff latencies drastically (factor of 8-14)

          ii. Slow communication between APs can be yet another bottleneck.

         iii. IAPP with caching: Provides security with performance

         iv. Performs better with higher mobility.

          v. Reduces inter-AP Communication

         vi. All of this is accomplished without significant changes to IAPP, i.e. the addition of one message, and NO CHANGES to anything else.

    m. Comments:

          i. Question on the pushing of information to the AP's neighbors

          ii. Discussion on the size of the cache, and the benefits of which client gets the rewards.

         iii. Some mobile phone types would really like this.

         iv. Transition of cell phones to WLAN or other networks have a handoff issue that this helps with.

          v. There is a way that they are looking at ways to extend this.

         vi. Pre-Authentication has been a topic of interest.

        vii. The Probe phase is the dominating factor in the latencies

       viii. The neighbour list is built up based on the traffic being reassociated, and is dynamic. The cache would have a time-out that would need to be involved to keep the table alive.

         ix. Discussions back in 95 were similar to this proposal, but this has a more efficient/low impact from the schemes that were discussed previously. This seems to be ok, and would

             do no harm to send the security context to all the neighbors, but is there a problem with sending this information out to the neighbors

       x.   One of the goals of the algorithm was to not reduce the security from what there is now. If bogus move requests are used, you can get the security blocks from other APs and so you are not any the worse off from what we have now. Not included in the proposal are some things that have changed in TGi, and so they are one step out of sync.

    n.   A quick straw poll to see the level of support: most yes, some no, not as many willing to delay TGf to get it in. As the comment from Bill Arbough is actually a comment from a non-ballot pool member, and the way to get this into the draft would be to allow a member who is in the ballot pool submit the comment, but the text would all need to be ready and prepared prior to the end of the ballot. One way to get this in if there is enough support. If there weren't support, the originator would need to do more work.

       i.   Comment, passing keys around makes pair-wise key become like a group key. This addition would seem to make TGf more usable, and the security context with the client would be in place. APs are already authorized to hold the secure keys, and they would be able to transmit the keys securely.

      ii.   The STA that moves would be less likely to …..

     iii.   The rogue STA or AP problem would not be defined in the RADIUS server, and so it is not the issue, as the begin AP is the ….Rat hole called.

24. Comment Resolution

    a.   ID 4: William Arbaugh's Advisory Only comment

       i.   Discussion presentation above.

      ii.   Disposition: The TG feels that given the advisory nature of this comment and a concern over the delay that adding this functionality at this point in the process would incur (given the lack of available draft text to implement the concepts). It is pointed out that this response will be circulated with draft 4.1, and if there is support from other ballot pool members for this proposal, and the reviewer were to create the text necessary to include the functionality in the TGf draft, that there is potential for inclusion as part of a re-circ comment submission. The reviewer is advised that this would require a completed text proposal by the end of the recirc ballot period, which is anticipated for mid dec. 2002.

25. Recessed 2:45: but will reconvene at 3:15.

    ----Break ----

26. Reconvened at 3:20 pm

27. Comment Process continues

    a.   ID 75: AP Forwarding.

       i.   The suggested remedy is declined primarily for the reason that the reviewer noted in the comment: that to implement this functionality there would have to be a change in the operation of the 802.11 protocol and such a change is not within the scope of TGf. However, the reviewer is referred to comment #4 from the sponsor ballot and the response to that comment. There may be an opportunity to accomplish the reviewer's desire for fast handoff with out needing to alter the 802.11 MAC protocol. The reviewer is encouraged to collaborate with the author of comment #4…See comment file.

      ii.   Approved Disposition without Objection.

    b.   ID 37: 6.6 Remove RADIUS request.

       i.   Discussion: we have already have had discussion like this, and would not be making such a drastic change.

      ii.   Disposition: Comment Declined. The suggested remedy is declined. The TG does not desire to remove all reliance on RADIUS and the document does not suggest a viable technical alternative. Regarding the desire for Fast and Secure handoff, the reviewer is referred to comment #4 from the sponsor ballot and the response to that comment. See comment file.

     iii.   Approved disposition without Objection.

28. Review of MSC diagrams from Terry Cole:

    a.   Bob O. has redrawn them to a package that is now editable and capable of putting in the draft if we find enough support.

    b.   Review Normal flow for Initiate.request and Initiate.confirm.

       i.   Check do we need to add the IPSEC ESP exchange here also? No then we would then need to double the diagrams or more to have the full story for all levels.

    c.   Review Initiate IAPP service and getting a Reject

    d.   Review MLME-Reset chart.

            i. Discussion on the reset vs. a start request and why it is important to do a Reset and Imitate
- e. Review MLME-Disassociation.request.
    - i. Question about having a RADIUS note on this chart, and it was determined that it didn't need to be on this chart.
- f. Review MLME-Associate -- Successful
- g. Review MLME-Associate, but with a Timeout status
    - i. It was noted that the confirm was missing, and so it was noted for the editor to add later.
    - ii. Also, it was noted that the Timeout – Ignore chart was missed in the porting, and will be added later.
- h. Review MLME-Associate, Fail
    - i. Need to add some missing confirms that are missing.
- i. Review MLME-Reassociate: Success
    - i. Cool charts.
    - ii. Note that this only shows How the RADIUS server provides an IP address not the entire RADIUS exchange or services.
- j. Review MLME- Reassociate: Stale Move
- k. Review MLME- Reassociate: Move Denied
- l. Review MLME-Reassociate: Timeout

29. Comment Resolution:
- a. ID 12: Fig 2
    - i. Discussion PUBLIC THANKS TO Terry Cole for providing a REAL Remedy to the comment that he made rather than just instructions to have the TG do it.
    - ii. MSC charts will be added to the appropriate places and will resolve several comments.
    - iii. Comment 12 is accepted and was approved without objection.
- b. ID 47: General
    - i. See comment file. State machine diagrams and MSC diagrams are different, but we believe that the MSC diagrams are better than State machines in an RP.
    - ii. Approved resolution without objection.
- c. ID 87: Figure 2
    - i. Accepted without objection, as we will add the MSC diagrams from See Minutes item 28.
    - ii. Approved resolution without Objection
- d. ID 93: 5.1.2
    - i. Resolution: Declined: the TG has not replaced figure in 5.1.2 because the TG believe that it has value. However, the TG has added MSC diagrams to draft 4.1.
    - ii. Approved resolution without Objection.

30. Review the comments that we need to resolve for Terry prior to his having to leave.
- a. None were left, but commentor's response was not solicited.

31. Comment Resolution:
- a. ID 2: General: NEW-BSSID-Security Block issue (Justin McCann)
    - i. What is the best way to verify that what is in the block is what was there before the encryption. What is needed is a message integrity process that validates the contents. The RADIUS Authentication block lets you know that the security block was transmitted without tampering, so the new BSSID block was protected by RADIUS. The OLD BSSID security Block, in 6.6 table 9 shows that we have protected this also. So we don't see the problem the commenter is pointing out.
    - ii. Disposition: After much discussion the TG has concluded that the problem presented in the comment is not really the problem it seems to be. For the New-BSSID-Security-Block the contents are protected by RADIUS authentication. For the OLD-BSSID-Security-Block the contents are protected by element ID 14….See comment file.
    - iii. Approved Resolution without Objection
- b. ID 34: Reliance on RADIUS causes Slow Handoff.
    - i. The suggested remedy is declined wrt to removing all reliance on RADIUS especially considering that the comment does not suggest a viable technical alternative. Regarding the Desire for fast and secure handoff, the reviewer is referred to Comment #4. (see comment file)
    - ii. Approved Resolution without Objection
- c. ID 42: Commenter doesn't understand 802.11f
    - i. Discussion, previous AD-Hoc response changed to include the reference to Comment #4. The comment is still declined, and is non-responsive, but there is more detail for the commenter to use. See Comment file.

        ii.   Approved New Resolution without Objection.
   d.   ID 28: RADIUS extensions not wanted.
        i.   The RADIUS extensions were identified by RADIUS experts, and….wait change that
        ii.   Disposition: Declined. Extensions to RADIUS servers are a common occurrence when functionality not envisioned during the original development of RADIUS is added to equipment requiring authentication. Many extensions to the RADIUS have been created and RADIUS servers provide ways to add additional extensions.   The TG disagrees with the suggested remedy and declines to rewrite the draft to use an (undefined) "off the shelf" radius server. It is anticipated that TGf radius extensions will be offered to add TGf functionality to existing server installations – at least one TGf member is planning to do so. (John V. for example)
        iii.   Approved resolution without Objection.

32.   Open comments are now about less than 10-15.
   a.   We start 8 am tomorrow.
   b.   We need to look at the RADIUS kick-start and a MIB extension draft.
   c.   The TG chair will validate that we haven't missed any comments, and will place a current PDF of the comment file on the share directory on the server.
   d.   TG chair will send the response file out to the commentors to start the resolution process to get reactions from folks.

33.   Recessed 4:56pm (early because we have made such good progress)

34.   Reconvened Thursday at about 8:05
   a.   Secretary was late due to the location was hard to find, and was hopefully having the room changed.

35.   Comment Processing
   a.   From Dave's notes/minutes
       "Meeting convened 8:05
        i.   Trying to move to another room no screen or LAN
        ii.   ID 72:
           1.   Disposition: See Comment File:
           2.   Comment accepted without Objection"

36.   Recess for room change moved from a room that was not usable to one that was viable 8:25am.

37.   Reconvened 8:34 am
38.   Comment Processing continues
   a.   ID 74: Standard RADIUS Server question
        i.   Discussion: Similar comment to one that we did earlier, start the response with the same text from ID 28? And then address the second part of the commenters issue.
        ii.   The potential for a security issue mentioned; the access is not via MAC address only, but via MAC address and shared secret, so this seemed not to be a problem.
        iii.   Resolution: See comment file.
        iv.   Approved Resolution without Objection.
   b.   ID 3: Implied Static Configuration of APs
        i.   Discussion: Problem of having to configure Static IPs to make RADIUS used, the alternative to doing this is by utilizing the Internet Draft: draft –Moskowitiz-RADIUS-Client-Kiskstart-00.txt. The Diffy-helman process is used to allow changing the IP address/secrets and setting them up. The fingerprint would only have to be checked on one side (i.e. the server side). The discussion on what the Internet Draft was covering was then explained. Explanation of the setting of the IP address and the RADIUS server was then explained. The initial setup of an AP was described. The RADIUS secrets should be unique to the usage. The TGf RP has 2 secrets, and the question was if these could be the same. It was pointed out that the Security point of view would be very concerned with the use of the same secret in both places. The Certification process would require the IAPP loaded to get the FIPS140-3 certification. The ability the certify separately is another reason to have separate or the possibility of separate keys.
        ii.   In clause 1.3, the text that was being adjusted for another comment was read, and then in addition of the text that was proposed to resolve this comment. The sentence that was proposed had a few words that seemed emotionally charged. The discussion then was to see if the sentence could be written to diffuse the emotion rather than escalate. The discussion then was to whether the sentence was needed or not. If the sentence was something like to avoid x do y. The issue is can we do something that doesn't have x

either.   Maybe we could phrase it that there is work going on in IETF for RADIUS client configuration and please reference the Kickstart document.

  iii. Resolution: Accepted: the issue in the comment would be a problem for any ESS with more than a few APs; however, the need to statically configure the IP addresses can be avoided via the use of IETF draft-moskowitz-radius-client-kickstart-00.txt, which can be found on the IETF site. Text has been added to Draft 4.1 to explain this and point to the IETF draft.

  iv. Approved Resolution without Objection.

 c. ID 1: Insufficient MIB

  i. Discussion: the comment says that we need to take care of IAPP and help make APs more manageable. The current RP doesn't do much to help make the APs very manageable. The RRM group has been talking about how to make measurements, and then whom would you ask for the results of the measurement. How to identify the members of the BSS, and so the conception is how to get a list of who is there. Then once you have that you can ask each individual for the measurements. A set of questions that are needed to provide the MIB with sufficient info to make management easier. While this is not an all-inclusive set of questions, these could be extended in the future. There are not many new items that haven't been talked about, i.e. the manufacturer and model of the MIB. The question of if the IETF Host MIB was referenced or known about.

  ii. Tom T has a proposed MIB for review and discussion. The proposed MIB was then reviewed. Can the RP define a MIB that would not be part of the standard? If RRM adds it to their amendment and make it a normative part of their work. The question is then can TGf get the MIB ids reserved, and then have it sucked into the RRM effort. Whenever you add things to a MIB, it is added to the end, so that anyone checking the existing MIB would not have issues. The question seemed to be that if the MIB should be extended now, or could we use a new recirc ballot to allow it in later.

  iii. RFC 2790 is the Host Resource MIB, The abstract was then read.

  iv. A proposal that we take Tom's text and insert it as part of this recirc. The question was if a more specific review would be done on the MIB prior to having it go out would hopefully be done prior to being sent out. All edits are currently in as have been approved, and the MIB currently doesn't compile in the Editors MIB compiler, so some changes need to made to resolve the issue. The Draft is due to the IEEE by the 22nd so that the Recirc could be run for 14 days with a planned conclusion of about mid Dec and has all the comments back prior to our Jan Interim.

  v. The information in a MIB is used to provide qualified information to respective agents. The discussion was on the usage of MIB and what/why they use them and the security levels involved. Concerned that the MIB would need to be edited prior to being included, or include it and have the editing to the MIB done later. Then the Recirc would be able to review the edited MIB and then be able to comments again in the next Recirc.

  vi. Resolution: Accepted: The TG has expanded the MIB definitions in Draft 4.1

  vii. Resolution approved without Objection.

39. Multicast Address was applied by Stuart, but the answer/request seems to be lost. So Stuart gave permission to have Dave go and get the address for the TG. This was then done online.

 a. A Request was made, and the reply will hopefully come soon.

40. Attribute Numbers needed for RADIUS (See Comment ID 63).

 a. Try to locate the process to get the number.

41. Recess 10:05 will reconvene at 10:30.

42. Reconvene: 10:30

 a. Group worked on final edits of the text

 b. ID 63: Attributes were defined, the footnote was incorrect.

  i. Commenter will be pointed to the table referenced.

  ii. Resolution stays the same; the numbers didn't need to be requested.

43. R4 comment response document has been placed on the server.

44. Review Report Slides that Dave will use in the Closing Plenary.

 a. Approve the entire comment response doc unanimously without objection

45. Call for New Business
    a. No new Business was presented.
46. Output Docs 659r4, 660r0 and 658r0.
47. Delayed while final edits were reviewed.
48. 802.11F.mib is the file that has the corrected MIB from Annex A.
49. IEEE802dot11AP-MIB.mib file has the Access Point MIB from Tom T, and will be incorporated as Annex B.
50. Draft 4.1 will be available in the Draft folders

51. Adjourn at 11:26 pm. Moved by Butch A. 2nd Bob M.

IEEE P802.11
Wireless LANs
November 2002 Kauai Plenary TGg Meeting Minutes

Date: November 11-15, 2002

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Abstract

Minutes

The outline numbers are based on the approved agenda (11-02-703r0).

Monday, November 11, 2002   3:30 PM – 9:30 PM
0.   Meeting called to order at 3:50 PM
    0.1.   The chair announced that we are experiencing some technical difficulities (he forgot his DVI-VGA dongle, so he has needed to use John Terry's pc to display)
    0.2.   Tentative Agenda is in 11-02-703r0
1.   Chair's Status Update and Review of Objectives for the Session (11-02-704r0)
    1.1.   Review Recirculation Ballot Results (LB#49)
    1.2.   Resolve comments and issue a new recirculation ballot or forward to sponsor ballot
    1.3.   Joint meeting with 802.18
    1.4.   Review of Votes
        1.4.1.   Currently (215) 86% YES and (35) 14% NO (25) Abstain
        1.4.2.   The number of new NO votes is only 12 and the number of new YES votes is 48.
    1.5.   The resolutions for the editorial votes will be turned over to Carl Andren (the task group editor)
    1.6.   We had two formal appeals regarding LB49 stating that the letter ballot rules were not followed correctly.
        1.6.1.   To resolve: Ask TGg to have one more recirculation ballot with changes from Draft 3.0 to Draft 4.0. This is possible to do from an editorial position
        1.6.2.   Chair: This seems to be the best option from a risk mitigation standpoint.
        1.6.3.   One color for D3.0 to D5.0, and another color for D4.0 to D5.0.
        1.6.4.   If we were to forward D4.0 to Sponsor Ballot, there will likely be an appeal of the validity of LB49.
2.   Review Policy & Rules
3.   Approve or modify agenda
    3.1.   Motion: Move to adopt the agenda as presented.
        3.1.1.   Moved: Carl Andren
        3.1.2.   Seconded: Bill Carney
        3.1.3.   Discussion:
                3.1.3.1.   Bill Carney: Change agenda item 7 to 45 minutes from 15 minutes.
                3.1.3.2.   This amendment was adopted by unanimous consent
        3.1.4.   Vote: 27-0-3 (approved unanimously)
Announcement: Kevin Smart will no longer be able to serve as secretary, so he will need to resign at the end of this session. We will wait until later to accept his resignation so he can complete his duties this meeting.
4.   Review and Approve Minutes from Monterey Meeting
5.   Review of Letter Ballot #49
    5.1.   Handled in Chair's update

6. Resolution of Comments
    6.1. Looking for volunteers for resolving the comments
    6.2. Complaints about the conflict with HTSG
        6.2.1. No objection to having a straw poll to back up the request to not have HTSG and TGg be scheduled at the same time
    6.3. Straw poll:
        6.3.1. 1. Would prefer to not have 802.11g and the high throughput study group scheduled at the same time
        6.3.2. 2. Have no preference
        6.3.3. Vote: (1) 40 to (2) 0. Unanimous consent for expressing this view to the WG chair
    6.4. We skipped approval of the minutes

4. Approval of the minutes.
    4.1. Motion to adopt the minutes from Monterey in 11-02-543r0.
    4.2. Moved: Tom Costas
    4.3. Seconded: Dick Allen
    4.4. Approved by unanimous consent

    6.5. It appears that the volunteers may be more plentiful if there is not a conflict with the HTSG. It looks like we could recess this session and skip the meeting that conflicts with the HTSG.
    6.6. Volunteers (some coaxed):
        6.6.1. Steve Halford
        6.6.2. John Terry
        6.6.3. Stan Reible
    6.7. Is there any objection to recessing the main group to let the four volunteers' partion the work?
        6.7.1. There is no objection
    6.8. There is no objection to recessing until 1:00 PM tomorrow.

Recessed at 4:48 PM

Tuesday, November 12, 2002   1:00 PM – 9:30 PM

Meeting called to order at 1:08 PM

    6.9. We are in comment resolution.
    6.10. Of the 8 NO voters who didn't give a vote this time, 3 were contacted. 2 have changed their votes to YES and one is still reviewing the document.
    6.11. The volunteers are just getting started in determining the resolutions
    6.12. Steve Halford is leading the discussion for his comments. (Comments 7-51, based on Clause 19)
        6.12.1. Comment Row 7—Editorial…Comment accepted by UC
        6.12.2. Row 8—same as Row 7… comment accepted by UC
        6.12.3. Row 9—The comment seems to refer to a poorly worded sentence. Steve Halford looked at his suggestion on how to resolve this. With a little word-smithing, Steve's comment was adopted as the resolution. Yuri was satisfied with this resolution and indicates that Mark would also likely be satisfied.
        6.12.4. Row 10—Maximum input level. Addressed previously. There was a little concern that the comment addresses single carrier, but the resolution was for ERP (both single- and multi-carrier). The RF section will be common between both modulations, so it make sense to keep them the same.
            6.12.4.1. Yuri: It makes sense to me to have different maximum levels for the modulation types.
            6.12.4.2. Chair: Does anyone who knows of a persistent NO vote by leaving it at -20 dBm? (none)
            6.12.4.3. Chair: Does anyone want to introduce a motion to change the maximum input level? (none)
            6.12.4.4. Chair: Is there any objection to rejecting the comment? (none)
            6.12.4.5. Comment rejected by UC
        6.12.5. Row 11—Changed to editorial. The sentence is removed (as suggested by the commentor), so the commentor will be satisfied. Sentence was removed by UC.

6.12.6. Row 12—Duplicate of Row 9, which was countered by modifiying the sentence. Comment countered by UC.

6.12.7. Row 13—Exact duplicate of Row 10.

6.12.8. Row 14—Duplicate from previous letter ballot. Addressed previously. Converted to editorial previously. Chair suggested a proposed resolution. The commentor accepts the resolution. Group adopted the resolution by UC.

6.12.9. Row 15—Interability question. Addressed in the previous letter ballot. We read through the previous resolution. We are adopting the same resolution that we did last time. We didn't make any changes, so the comment is rejected by UC.

6.12.10. Row 16—Exact duplicate of Row 15.

6.12.11. Row 17—Wants transmit power levels. Relates to 19.2. It refers to 8 levels. The commentor wants this clarified, by stating what the TX power levels are or that it is up to the implementor.

    6.12.11.1. Straw Poll:

      6.12.11.1.1. 1. Should we explicitly state what the power levels are?

      6.12.11.1.2. 2. Should we leave it up to the implementor?

      6.12.11.1.3. Vote (1) 4 – (2) 26

    6.12.11.2. The group wants to leave it up to the implementor. This will satisfy the commentor based on his comment. Comment accepted by UC.

6.12.12. Row 18—Point regarding incompatible PHYs. The comment was addressed in previous letter ballots. There is no known technical flaw with including these PHYs. The resolution wording was worked on. Comment was rejected by UC.

6.12.13. Row 19—Changed to editorial. Table 19.2-1 was changed with some editorial clean-up. Adopted by UC.

    6.12.13.1. Mark Webster: Perhaps we should strike the words *mandatory* and *optional* since we are not trying to say what is optional or mandatory, we are just trying to put the values for the table.

    6.12.13.2. There seemed to be good support for Mark's suggestion. The terminology of mandatory and optional was removed from 19.2-1. The comment was countered by UC.

6.12.14. Row 20—Exact copy of 17

6.12.15. Row 21—Changed to editorial. Looking for commentor.

6.12.16. Row 22—Duplicate of Comment Row 10. No further discussion. Rejected by UC.

6.12.17. Row 23—Exact duplicate of row 22.

6.12.18. Rows 24-26—Repeated comment from previous letter ballot. Actual resolutions from previous comment resolution will be copied as the resolution. Done by UC. (Kevin Smart wanted to ensure that the text from previous comment resolutions was moved and not just a reference inserted.)

6.12.19. Row 27—The table is correct as written. The change should not be made. An alternative suggestion is to delete the whole sentence. The sentence was deleted and the comment was countered by UC.

6.12.20. Row 28—Copy of previous comment from earlier letter ballot. The resolution was wordsmithed and rejected. Done by UC.

6.12.21. Row 29—Resolved by UC.

6.12.22. Row 30—Concern about the clock switching for PBCC-33. Comment was resolved by UC.

6.12.23. Row 31—We will avoid the term and changed the last sentence of the paragraph. Comment resolved by UC.

Break at 3:03 PM
Session back to order at 3:49 PM
Working on Comment Resolution Document 11-02-711.

6.12.24. Row 32—The comment is countered by UC.

6.12.25. Row 33—Exact duplicate of 32.

6.12.26. Row 34—The reference was corrected by UC.

6.12.27. Row 35—Discussed previously. Commentor wants a statement to the effect that 3 and 9 is preferred. The group wants to counter and suggest that 1, 6, and 11 can be used as in 802.11b. Comment rejected by UC.

6.12.28. Row 36—Short slot time comment. The commentor gave the wrong section. The correct section is 19.4.4. There is no objection to adopting the change that was suggested. Comment resolved by UC.

6.12.29. Row 37—Exact duplicate of 32.

6.12.30. Row 38—Deferred to a later Terry Cole's group.

6.12.31. Row 39—Comment was addressed previously. Comment was rejected and the resolution was adopted by UC.

6.12.32. Rows 40-41—The comment was rejected by UC.

6.12.33. Rows 42-43—This comment was accepted and countered. Done by UC.

6.12.34. Row 44—This s a repeat of an earlier comment. The comment was rejected by UC.

6.12.35. Rows 45-48—Resolved by resolution of 42-43. Accepted by resolution to 42-43 by UC.

6.12.36. Row 49—Spectral mask issue.

6.12.36.1.　Mickey: This issue has come up many times. What the commentor has said is the case. We need to address this in a technical manor.

6.12.36.2.　Kevin Smart: This will cause additional degradation over what is seen in 802.11b.

6.12.36.3.　Dick Allen: I don't think this is a real issue. We see similar effects in 802.11b and we live with it.

6.12.36.4.　There was no objection to rejecting the comment. However some NO votes will likely be maintained.

6.12.37. Rows 50-51—Row 49 addresses a similar issue, so the same resolution will be used. Comment rejected by UC.

6.13. Stan Reible (Rows 52-64)

6.13.1.　Row 52—Commentor offered no solution. We are not aware of ill effects between the different PHYs. Rejected by UC.

6.13.2.　Rows 53-54—Same basic comment as 52. Same resolution applies. Comments rejected by UC.

6.13.3.　Row 55—CCK-OFDM doesn't have the necessary support for removal. Rejected by UC.

6.13.4.　Row 56—Change accepted. Done by UC.

6.13.5.　Row 57—Comment rejected by UC.

Break for dinner at 5:28 PM
Meeting called to order at 7:09 PM

6.13.6.　Row 58—Accepted the comment by UC.

6.13.7.　Row 59—Exactly the same as 57.

6.13.8.　Rows 60-62—Rejected by unanimous consent.

6.13.9.　Row 63-64—Accepted by UC.

6.14. John Terry (Rows 123-152)

6.14.1.　Rows 123-129—Considered Editorial and sent to the editor. Comments accepted. Done by UC.

6.14.2.　Row 130—Comment should be ignored due to "anyone with half a brain" statement. Commentor needs to give constructive criticism and not insult the task group. We pointed out that we did address his comment and rejected his comment by UC.

6.14.3.　Rows 131-133—All address the same basic issue. Comments were moved to the other group.

6.14.4.　Row 134-137—Moved to Terry Cole's group.

6.14.5.　Row 138—Moved to Editorial.

6.14.6.　Row 139—Moved to Terry's group. Done by UC.

6.14.7.　Row 140—Suggested changes were accepted by UC.

6.14.8.　Row 141—Unsure. Deferred.

6.14.9.　Row 142—Rejected. The ACK is done with a modulation from the basic rate set. Done by UC.

6.14.10. Row 143—Comment Accepted. The changes will be highlighted in different colors to help the commentor determine what has changed from D3.0 to D4.0 (As well as D4.0 to D5.0). Commentor will change his vote with this change. Resolved by UC.

6.14.11. Rows 144-145—Directed the Editor to look at the problem. Comment rejected by UC.

6.14.12. Row 146—CCA and short slot time… Bobby Jose came to help us resolve this. Basic idea is that STAs can use short or long slot times. There may be fractional CCA detections, so the probability of collision increases. This is not across the board, but only when there are legacy devices…. Commentor wants to reword this and send it to us.

6.14.13. Row 147—Bobby will also include this with his rework of 146.

6.14.14. Row 148—Editorial comment. Editor is directed to look at the names and make them consistent throughout the document. Done by UC.

6.14.15. Row 149—Comment rejected by previous motion. Done by UC.

6.14.16. Row 150—Repeated from last time. Change CCK-OFDM to DSSS-OFDM….
       6.14.16.1.   Carl Andren: I would propose that we do this and change it to "Barker-OFDM"
       6.14.16.2.   Sean Coffey: I would like to leave it as is. It won't change my vote….
       6.14.16.3.   CCK-OFDM will now be Barker-OFDM. Comment accepted by UC.
6.14.17. Row 151—Comment rejected by using Row 149's resolution. Done by UC.
6.14.18. Row 152—No technical change required. Point out that the resolutions were adopted by UC.
6.15. Terry Cole
   6.15.1.   Row 3—Table 7.3.2.9 is a little confusing. We need to clarify this text. Editor was instructed to do so. Comment countered. Done by UC.
   6.15.2.   Row 4—Comment rejected. Terry's resolution was adopted by UC.

Recessed for the Day at 9:17 PM.

Wednesday, November 13, 2002   8:00 AM – 5:00 PM

Meeting called to order at 8:05 AM.

   6.15.3.   <mark>Document 11-02-711r2 contains the comment resolutions up to this point</mark>.
   6.15.4.   Two presentations:
       6.15.4.1. Matthew Fischer—Short Slot Time
       6.15.4.2. James—Clarification of 6us Length Extension
   6.15.5.   Row 5—We have unspecified how to start a RTS/CTS. It doesn't seem to be broken. The editor has a clarification that he can add. The resolution was adopted by UC.
   6.15.6.   Row 71—A new response was drafted and adopted by UC.
   6.15.7.   Row 72—Similar to 71. A new response was drafted and adopted by UC.
   6.15.8.   Row 73—
       6.15.8.1. Many comments regarding short slot time
       6.15.8.1.1.   Sean Coffey: The short slot time came very late in the game. The mechanisms were loosly work out. I think we should adopt Don Sloan's comment (Row 98) and change it a word from *shall* to *may*. This is a pretty complex problem. We don't want to introduce too complex of a solution at this phase.
       6.15.8.1.2.   Matthew: I think Sean's is a solid solution and is probably a good way to proceed.
       6.15.8.2. Review of the comments related to ShortSlotTime option
       6.15.8.3. Mark Webster: It appears that there are two camps: one that wants to loosen the rules and one that wants to tighten it. Perhaps we should have a straw poll to see who is in favour of the Don Sloan type solution.
       6.15.8.4. Terry Cole: There is a third camp: those who would like to see it gone.
       6.15.8.5. Mark W: Personally, I like the Don Sloan approach. The short slot time is very appealing.
       6.15.8.6. Straw Polls:
   6.15.9.   Row 98—
       6.15.9.1. There was some opposition to following Don's approach.
       6.15.9.2. Jan Boer: Direction---leave it as it is
       6.15.9.3. Uri: I think that changing this will give unfair advantage to a BSS that has this option.
       6.15.9.4. Carl Andren: The argument goes that long slot times will propagate everywhere if there is just one long slot time. This approach seems to be preferable.
       6.15.9.5. Matthew: There are two *shall*s.
       6.15.9.6. Jan: I could go with the change given that it is the second *shall*.
       6.15.9.7. Steve Halford: What I understood from the last meeting was that if you set up a network for short slot times, you can deny association with a STA that doesn't support short slot times.
       6.15.9.8. Chair: That is correct
       6.15.9.9. Mark W: I haven't seen this use of language where you *may* do something.
       6.15.9.10.   Jan: If we change it to *may* then we could just get rid of the last sentence.
       6.15.9.11.   Sean: The simplest thing is to take the sentence out.
       6.15.9.12.   Terry: It is important that the AP has the ability to do what it wants. I like to leave the word *may*.
       6.15.9.13.   Straw Poll

6.15.9.13.1. 1. Leave the sentence the way it is with the word *shall*.

6.15.9.13.2. 2. Do you support changing if to *may*.

6.15.9.13.3. 3. Do you support eliminating the sentence.

6.15.9.13.4. Unlimited voting: (1) 7 – (2) 19 – (3) 21

6.15.9.14. Straw Poll

6.15.9.14.1. If we take this sentence out, who remain or change to a NO vote.

6.15.9.15. Sean:

6.15.9.16. Matthew: The last two options are essentially the same.

6.15.9.17. Terry: If we want to take it out, I would advise that we do something along the following lines "If you allow an association of someone with Long slots, then the BSS shall switch to long." It is important that we fix the first sentence very carefully.

6.15.9.18. Straw Poll

6.15.9.18.1. 1. Those in favour of changing from *shall* to *may*.

6.15.9.18.2. 2. Those who would like to see the whole sentence removed.

6.15.9.18.3. Only vote for one: (1) 10 – (2) 16

6.15.9.19. No objection to removing the sentence. The sentence was removed by UC and Don's comment was countered.

6.15.10. In Annex E, there is a section about what a STA may do with overlapping BSSs. Should be put in any informative text for what an AP may do?

6.15.10.1. Sean: I think that Annex E needs to be looked at…

6.15.11. Row 82—Seems to be the best of the lot regarding this sentence. If everyone supports short slot times, the AP has the option to either do Short or Long slots. What we want to do is explicitly state that in the text. Terry and Carl will work on that wording during the break.

6.15.11.1. Jan Boer has a concern that this will not address all of the comments.

6.15.12. Row 76—We handled this request by removing the sentence.

6.15.13. Row 77—We just deleted the sentence, so we could remove this paragraph to resolve this problem

6.15.13.1. Duncan: All of the comments point out the situation that the coordination between neighboring BSSs isn't defined. If we do this then the BSS that supports short slot times will trample the long slot network.

6.15.13.2. Straw Poll:

6.15.13.2.1. Does TGg believe that there should be specified short slot time coordination between co-located BSSs?

6.15.13.2.2. (Yes) 19 – (No) 14

6.15.13.3. Uri: The way the questions were asked led to a solution. That is why we have seeming contradictory results.

6.15.13.4. Mickey: One reason is that the previous clauses lead to some ambiguity.

6.15.13.5. Mark W: Earlier we asked if anyone would vote NO. Perhaps we should ask the same question here.

6.15.13.6. Question: If NO short slot time coordination between co-located BSSs is specified, will this generated a NO vote from you?

6.15.13.7. (Yes) 4 – (No) 23

Recessed at 10:03 AM
Meeting Called to Order at 1:12 PM

7. Joint Meeting with 802.18 (Special agenda item with a fixed time)

7.1. Carl Stevenson is giving an update regarding New Zeland, Japan, and the US.

7.2. Report of regulatory acceptability in US, Europe, and Japan

7.2.1. Sees no problems in the US

7.2.2. It looks like we are okay in Europe, but the power limit is different

7.2.3. Japan is very difficult to get information

7.2.3.1. Japanese collegues said that OFDM is permissible

7.2.3.2. Requested additional information, but we may need to get it translated

7.2.3.3. OFDM, FH, and DS all look permissible.

7.2.4. Australia—there seems to be a license by compliance. Showed an older one from 1996. The old one appears that it will be revoked and a new class license will be created. It looks like they may be referring to an old FCC 15.247 version.

7.2.4.1. There is a new Standards Australia effort. At that point devices must comply with that standard.

7.3. All of these documents are available on the 802.18 .
7.4. There seems to be a cap of 4W EIRP.
7.5. Is there a reason to request more than 4W EIRP with high gain antennae?
    7.5.1. There is modest support and no objection to making that request.
7.6. The FCC has simplified the OFDM rules in the UNII band
7.7. We are requesting similar clarification in the 2.4 GHz band.
7.8. Australia and New Zeland share many of the same standards. (Virtually in lock-step)
7.9. Looking for Japanese regulations on licensed and unlicensed in English.

Joint session adjourned at 1:33 PM
Back to comment resolution
Working from Comment Resolution Document 11-02-711r3

6. Continuation from above
    6.15.14. Row 75—There is an editorial error that we will fix. Waiting for the team report on how to deal with short slot times.
    6.15.15. Row 76—Short slot time specification… We deleted the sentence in question.
    6.15.16. Row 77—We will be countering with the proposal from the team.
    6.15.17. Row 78—We will be countering with the proposal from the team.
    6.15.18. Row 79—We will be accepting with the proposal from the team.
    6.15.19. Row 80—We will be accepting with the proposal from the team.
    6.15.20. Row 81—We will be countering with the proposal from the team.
    6.15.21. Row 82—We will be countering with the proposal from the team.
    6.15.22. Row 83—We will be accepting with the proposal from the team.
    6.15.23. Row 84—We will be countering with the proposal from the team.
    6.15.24. Row 85—We will be accepting with the proposal from the team.
    6.15.25. Row 86—We will be accepting with the proposal from the team.
    6.15.26. Row 87—We will be accepting with the proposal from the team.
    6.15.27. Row 88—We will be accepting with the proposal from the team.
    6.15.28. Row 89—We will be accepting with the proposal from the team.
    6.15.29. Row 90—We will be accepting with the proposal from the team.
    6.15.30. Row 91—Repeated from last letter ballot. We will be countering with the proposal from the team.
    6.15.31. Presentation of Draft 4.1 by Carl Andren
        6.15.31.8. Editorial Row 7. Some text that may have been causing confusion was deleted. Done by UC.
        6.15.31.9. Carl went through his resolutions

Recessed at 3:00 PM
Session called to order at 3:30 PM

        6.15.31.10. Carl continued going through his resolutions
    6.15.32. Presentation by Matthew Fischer (Document 11-02-734r2).
        6.15.32.8. Questions on the presentation.
        6.15.32.8.1. Joe: I can see how this resolves the problem of getting stuck in long slot times. Some further questions on how it can address other questions.
        6.15.32.8.2. No further Questions
        6.15.32.9. Sean: I would like to see some straw polls on the way to go. I believe that there are possibly some holes with the way we are handling this. Transferring data between BSSs should perhaps be its own PAR. I am advocating more the Don Sloan approach and avoid making things normative.
        6.15.32.10. Dick Allen: Why don't we just let the AP dictate the slot time. We can't eliminate all areas where we can reduce performance. It doesn't need to be part of the standard. We should be silent on the subject. We may be trying to solve a problem that isn't very big.
    6.15.33. Straw Polls:
        6.15.33.8. Remove the sentence that contains the 3rd shall in the 3rd from last paragraph of 7.3.1.4
        6.15.33.9. Vote: (Remove) – (Don't Remove) Not taken
    6.15.34. The 4th to the last sentence of 7.3.1.4 was deleted by UC.

6.15.35. The first sentence in the 3rd to the last sentence has some problems. It is being looked at. The feeling is that normative text should be minimized in order to have the fewest number of NO votes. We believe the spirit was correct, but the words don't match. There is resistance to getting rid of the sentence.

6.15.36. Dick: It may be better to allow long slot devices to associate and let their throughput suffer.

6.15.37. Sean: I am reluctant to raise some new possibilities of problems. 1. I would prefer to leave it the way it is (spirit). 2. I want to make sure that we can deny association.

6.15.38. We worked on the wording of the paragraph in question.

6.15.39. Jan Boer: We are not talking about overlapping BSSs.

6.15.40. Chair: We are chosing to be silent on the subject.

6.15.41. We are adopting the new text for the paragraph in question by UC.

Recessed for the evening at 4:57 PM.

Thursday, November 14, 2002   8:00 AM – 3:00 PM

Meeting called to order at 8:08 AM.

6.15.42. We will continue resolving comments regardless of what the other task groups are doing.

6.15.43. The return rate of the last two letter ballots was under 75%. For LB49, the return rate was approximately 72%. Al Petrick is trying to determine if the pool is actually correct. If our return rate is not 75%, then we will have to do a full letter ballot out of this meeting. The goal is to make sure that we don't waste time. This seems to be limited to TGg. If we go to letter ballot, then is our first opportunity for sponsor ballot March? Chair: I am not sure, I will check with the 802.11 Chair. If we do go to letter ballot, we will have a new voting pool, which is much smaller.

==Working from Comment Resolution Document 11-02-711r4==

6.15.44. Jan is yielding the floor to return to comment resolution.

6.15.45. We will be working from comments that we haven't yet talked about.

6.15.46. Row 92—Repeat from earlier comment. Capability information should not be overhead in every packet that is not static or changes infrequently. The comment was rejected by UC.

6.15.47. Row 93—The commentor was correct. The sentence was deleted and the paragraph was revised. The comment was accepted by UC.

6.15.48. Row 94—Similar to 93. The comment was accepted by UC.

6.15.49. Row 95—

    6.15.49.8.   Uri—I am confused because yesterday we had a vote that said that the body would like to have this type of functionality.

    6.15.49.9.   Chair—We had a presentation yesterday. After that we agreed unanimously to take out the functionality and remain silent on the topic.

    6.15.49.10.   Uri—The issue was that the right solution was not available and we didn't have time to do it.

    6.15.49.11.   Chair—Comment Row 94 points out that such a mechanism could be outside of our PAR

    6.15.49.12.   Should we state that we think it is outside our PAR? There was some indication that we should stay away from such a comment.

    6.15.49.13.   The group word smithed the response. The response was adopted by UC.

6.15.50. Row 96—Comment was accepted and the resolution was adopted by UC.

6.15.51. Row 97—Comment was accepted. The text was adopted. Done by UC.

6.15.52. Row 98—We have already visited this comment. The group agrees in principle. We removed the sentence entirely. Done by UC.

6.15.53. Row 99—We resolved this technically last time, but we put the wrong words in the document. The document was corrected. Done by UC.

6.15.54. Row 100—The comment was reviewed and countered by UC.

6.15.55. Row 101—This is the first sentence was messed up. The comment was review. We accepted by UC.

6.15.56. Row 102—We need to talk with Adrian on this topic during the break.

6.15.57. Row 103—Remove TBDs. There are no TBDs in 4.2 (and later). Comment resolved by UC.

6.15.58. Row 104—The comment was accepted in principle. Comment resolved by UC.

6.15.59. Row 105—There is a question about normative text and how to verify a bit. There was some discussion and a suggestion that the text be changed so it is no longer normative. This is similar to the short slot time arguments. The comment was accepted and resolved by UC.

6.15.60. Row 106—Comment was rejected by UC.

6.15.61. Rows 107-108—The comment was rejected. The resolution was adopted by UC.

Meeting recessed at 10:05 AM
Meeting called back to order at 10:35 AM

6.15.62. A list with people who didn't vote on LB42 or LB49 was passed around. We are to notify the chair if any of those people would like to rescind their voting rights for that vote.

6.15.63. Row 109—We accept in principle. An example only was shown. The desired behaviour is not prhohibited. Resolved by UC.

6.15.64. Rows 110-111—This is another aCWmin statement. The comment was considered. The resolution seems to be reasonable. Chair: I am somewhat uncomfortable with tying these things together. Dick Allen: I am also uncomfortable. Matthew Fischer: RTS/CTS isn't actually tied to the existence of non-ERP stations. Dick: We may come up with other protection mechanisms that wouldn't require aCWmin to change. Menzo: One reason for setting aCWmin to 15 for ERP PHYs is that their transmissions are shorter (independent of protection mechanisms). Chair: Many people are speaking in favour of rejecting this comment. The resolution was drafted. The comment(s) were rejected by UC.

6.15.65. Row 112—The comment was presented by the commentor. He went through the logic and then we made a couple of changes. The group agreed with the commentor. The comment was accepted and resolved by UC.

6.15.66. Row 113— We revised 9.6, so that the comment was addressed. Done by UC.

6.15.67. Row 114—The comment was accepted and resolved by UC.

6.15.68. Row 115—The commentor wants some informative text in Annex E. Dick Allen: I don't know that we have the time and initiative to talk about rate fallback issues. The comment was declined by UC.

6.15.69. Row 116—The commentor withdrew his comment.

6.15.70. Row 117—We adopted revised text. The comment was accepted and resolved by UC.

6.15.71. Row 118—We believe that we have addressed this comment with the resolution of 112. The comment was resolved by UC.

6.15.72. Rows 119-120—We revised 9.6, so that the comment was addressed. Done by UC.

6.15.73. Row 121— We revised 9.6, so that the comment was addressed. Done by UC.

6.15.74. Row 122—We agree in principle. We countered with the revised 9.6 text. Done by UC.

Meeting Recessed at 11:58 AM
Meeting Called Back to order at 1:00 PM
Working from Comment Resolution Document 11-02-711r5

6.15.75. We have obtained a time slot to complete the work for TGg from 3:30-5:30 PM
6.15.76. Row 75—Countered by UC
6.15.77. Row 76—Countered by UC
6.15.78. Row 77—Countered by UC
6.15.79. Row 78—Countered by UC
6.15.80. Row 79—Countered by UC
6.15.81. Row 80—Countered by UC
6.15.82. Row 81—Accepted by UC
6.15.83. Row 82—Accepted by UC
6.15.84. Row 83—Countered by UC
6.15.85. Row 84—Countered by UC
6.15.86. Row 85—Accepted by UC
6.15.87. Row 86—Accepted by UC
6.15.88. Row 87—Accepted by UC
6.15.89. Row 88—Accepted by UC
6.15.90. Row 89—Accepted by UC
6.15.91. Row 90—Accepted by UC
6.15.92. Row 91—Accepted by UC

6.15.93. Rows 131-133—Itentical comments. Countered by UC

6.15.94. Row 134—SDL will not be provided. Annex C will be deleted. The text is clear and is the formal description of MAC behaviour. The comment is rejected by UC.

6.15.95. Row 135—The comment was considered. There is some concern that Annex C contains valuable information. Terry: When Annex C is deleted, there will probably be some issues. I support removing Annex C, but there may be some issues down the line for the working group.

6.15.96. Row 136—Similar to 134. The comment was countered by UC.

6.15.97. Rows 137-138—Carl Andren: We don't really need to add these things to Annex E. Mark Webster: Don't need. No one wants any part of it. We need to address each point. John Terry will draft a response to this comment for later review.

6.15.98. There was a question about extending past 3:00 PM. We officially have increased our time until 5:30 PM. This has been posted and there will not be a time problem.

6.15.99. Row 139—We have removed the overlapping requirement. Annex E is an informative section. Two options: 1) say that the section is informative. 2) We can delete the sentence. Straw poll: (1) 12 – (2) 2. We have responded that the section is informative and not normative, so it is up to the implementor to decide the correct course of action. Done by UC.

6.15.100. Row 141—Open as editorial. The response was crafted. The text of the draft was modified. The comment was countered by UC.

6.15.101. Motion: Move to modify agenda and move the ajournement time to 5:30 PM.

6.15.102. Moved: Carl Andren

6.15.103. Seconded: Dick Allen

6.15.104. Row 142—Matthew Fischer: Perhaps we should add ACK to the list of what will propagate the NAV. Uri: The issue is to define the rate the ACK is sent at. Matt: This will clarify it by combining 9.9 with this list and the word ACK in E-2. The comment was countered by adding ACK to the list by UC.

6.15.105. Row 38—Commentor withdrew his comment.

6.15.106. Row 65—Editor has made the names consistent. Resolved by UC.

6.15.107. Row 67—Editor has made the names consistent. Resolved by UC.

6.15.108. Row 66—Carl: We have discussed this a while back. We know that you are an ERP rate when 6, 12, and 24 are in the rate set. If there is a reason to add a MIB variable, we can. – We are rejecting this comment because the capabilities will give us the information without a need for another MIB. Countered by UC.

6.15.109. Row 68—Comment is rejected.

6.15.110. Row 69—The commentor is correct. The way the rates are stated is inconsistent. It can be changed, but it is currently consistent with 802.11a. Perhaps a coding rate needs to be introduced. Terry Cole and Joe Mueller discovered that the draft was correct. Refer to Figure 126 in 11a. Comment rejected.

6.15.111. Row 6—Carl: Commenter is saying we should not be mucking with clause 18. Doesn't matter to Carl – adopting comment does not change clause 18 functionality. Comment is rejected.

6.15.112. Row 21—Carl – does not see a strong need to change it; suggests leaving it the way it is. Commenters request can be accommodated but has not been the practice in the past. Comment is rejected.

6.15.113. Row 123—Carl: Editorial – accepted change and added reference.

6.15.114. Row 124—Carl: Editorial – seemed redundant – did change referenced and fixed it up.

6.15.115. Row 125—Carl: Edtiorial – agreed and fixed it

6.15.116. Row 126—Carl: Editorial – agreed

6.15.117. Row 127—Countered

6.15.118. Row 128—Carl: Editorial – agreed

6.15.119. Row 129—No discussion on the editorial comments 123-129 – all resolutions Carl presented were adopted by unanimous consent.

6.15.120. Row 138— (very related to 137 and thus combined). Did not address compatibility with frequency hopping in section 15.1. Choose not to accept commenter's suggestion because a lot of the data is already in the text. Establishing a new prescedence because it is asking us to justify the decisions we have made. Proposal to adopt the text that John Terry prepared. Comments 137 and 138 rejected.

6.15.121. Row 73—Group agreed to remove the coordination between APs. This is a counter to the commenter's position. Accepted by group.

6.15.122.	Row 74—Again is resolved by removing coordination fuction between APs. This is a counter to the commenter's request. Accepted by group.

6.15.123.	Row 102—Carl: there may be problem in the clause (see 7.3.1.4). Adrian: issue is that capability is generally static except in this case. It is an implementation issue. If signalling dynamic info in the capability field, raises issues about when to check to see if it changes. Committee feels that this element is dynamic – Adrian suggested that it should include a count-down mechanism – Carl: we have the interbeacon interval – why not just use that? Adrian agrees timeout not necessary – still bothered by a capability that changes. Terry Cole: supports keeping the capability bits static – alternatively, the STA can disassociate and reassociate with the new slot time. Adrain summaries take short/long slot from capability field signalled by the AP and put in into the ERP indication element as must use long slot and retain use of the short slot capability field signalled by station in associate and reassociate exchanges. Carl: a STA shall set its short slot time capability bit to 1 if its MIB attribute indicates that it is capable of it. Sean Coffey asks why the STA should not be able to select what it wants. No objection to proposed resolution.

6.15.124.	Motion to move the new draft incorporating the comment resolution over the week, 11-02-711r8. Move to direct editor to incorporate the resolutions adoped in document 1-02-711r8 into draft 5.0 of 802.11g. Motion made Chris Hinsz, Second by John Coffey. Vote: in Favor: 22 Against: 0 Abstain: 1. Motion passes.

6.15.125.	Move to request an IEEE 802.11 Working Group letter ballot on draft 5.0 of the 802.11g draft to be issued within 14 days of the close of the November 2002 Session. Motion by Steve Halford. Second Jan Boer. Vote: in Favor: 25, Opposed: 0, Abstained: 1

6.15.126.	Move to accept the resignation of Kevin Smart as secretary of 802.11g and appoint Kevin Smart as secretary emeritus of 802.11g. Moved by Matthew Shoemake, John Terry seconds the motion. Vote: in favour: 25 opposed: 0, abstained: 0.

6.15.127.	Move to request pre-authorization for a Working Group recirculation ballot on the 802.11g dreaft for following the January 2003 session. Moved by Dick Allen/Joe Sensedorf: In favour: 24, opposed: 0, abstain: 0.

6.15.128.	Meeting adjourned.

IEEE P802.11
Wireless LANs

TGi Kauai Plenary Meeting Minutes
November 2002

Date: November 11-15, 2002

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Abstract

Minutes of the 802.11 Task Group I meetings held during the 802.11 WLAN Working Group Plenary Session in Kauai, Hawaii from November 11th – 15th.

Monday

Call to Order & Agreement on Agenda

Meeting called to order on Monday, November 11, 2002 3:47pm by Chair Dave Halasz.

Chair: Agenda discussion

Proposed Agenda:

- o Chair's Status
    - o TGi Meeting in Oct 2002
    - o Availability of draft
        - ▪ Available to WiFi alliance
        - ▪ Available to independent security analyst
    - o 802 Call for Interest
        - ▪ Meeting at Sheraton, Tues evening
- o Review IP Policy
- o Comment resolution of LB35 (draft 2 of Tgi)
    - o Request submission presentations
    - o Comment resolution
    - o Review Letter Ballot 35 comments
    - o Comment resolution
    - o General submissions
- o Prepare for next meeting.

Chair: Are there any changes to agenda?

None

Chair Status

TGi held a meeting in Herndon, VA at TrueSecure in October.

A submission of a TGi PICS has been prepared.

Need to allow access of the draft to the WiFi Alliance for WPA. We are working with them. WPA is a WiFi Alliance issue. We also need to make the draft available to third party security analyst before it becomes a standard and it's too late. It will be available at a cost. If we go to Letter Ballot, it will be draft 3. If we don't, it will be draft 2.6.

There is an 802 Call For Interest in common security for 802. The meeting will be tomorrow night at the Sheraton. This came out of 802.3ah. They have a model like ours and have a need for security. The purpose is to define a Study Group.

Review IP Policy

1.5 IEEE Patent Policy read by Chair

Chair: In order to go to Letter Ballot by the Wednesday Mid-Session Plenary, the draft would need to be on the server by 7:00pm Tuesday night. We need the motion to instruct the editor to prepare the draft Wednesday afternoon.

Submissions for comment resolution

Dave Halasz 02/647r2 Dave Halasz – Proposed PICS

Dave Halasz 02/648r0 – Clause 11 edits

Nancy 02/662 – Clause 5

Tom Maufer/Nancy 02/663 – 8.4.1.1

Dan 02/689 – Re-Authentication

Marty 02/684 – Extended key id mapping

Marty 02/686 – Extended key id mapping

David Johnston – 02/611 – Clarified CCM diagrams

David Johnston – 02/699 – Addresses as integers

David Johnston – 02/701 – TKIP

David Johnston – 02/665 – 802.1x misuses

David Johnston – 02/697 – 802.1x SME

David Johnston – 02/698 802.1x Encapsulation

David Johnston – 02/643 – Tx/Rx pseudo code

David Johnston – 02/700 CCM test vectors

Tim Moore 02/645 – TKIP replay protection rules

Tim Moore 02/646 – EAPOL Key Format

Tim Moore 02/681 – State machine changes

Tim Moore 02/xxx – assorted other motions

Jesse Walker 02/xxx –assorted other motions

Albert Young 02/xxx – Clause 8 edits

Frank Ciotti – 02/xxx – Deauthentication Clause text

Frank Ciotti – 02/xxx – Authentication Suite MIB

Mike Moreton – 02/685 – MLME

Mike Moreton – 02/683 – RSN IE

Chair: Are there further comment resolution submissions?

None

General submissions:

Chair: Any General submissions?

None.

Submissions for comment resolution

Submission: Dave Halasz – document 02/647 – Proposed PICS for 802.11i

Discussion:

Chair: This is needed to go to Letter Ballot

Comment: Was this meant to be pure RSN or TSN as well? Changes for pairwise key use in TSN vs. RSN

Chair: I was trying to get to Letter Ballot. We could pass the motion now, and then make changes later

Jesse: In favor of putting changes in now.

Chair: We know we are going to have to adjust it anyway. Why not do it later?

Comment: Can we table this until after the other motions to see how much has to change?

Chair: Yes

Comment: Paul Lambert volunteers to work with Tim to change this and submit tomorrow.

Chair: Sounds good.

Comment: What do the numbers in the Status column mean?

Chair: These refer to other line items in the PICS.

Comment: RSN means 802.1x, and this is only implied here.

Chair: No, it is stated.

Jesse: An RSN also means that you cannot support WEP. You must support CCM, and you may support TKIP.

Chair: Any further discussion?

None

Submission: Dave Halasz – document 02/648r0 – Proposed edit for Clause 11 for 802.11i

Discussion:

Chair: If you look at Clause 11, it doesn't describe other elements (e.g., supported rates).

Motion by Jesse Walker:

Motion to insert the text from document 02/648 into the TGi draft.

Second: Dorothy Stanley

Discussion:

None.

Vote: 31-0-1 Passes

Submission: Nancy Cam-Winget – document 02/662r0 – Clause 5.9.3.1

Discussion:

Nancy: Straw poll in Monterey was to include the frame exchanges in the draft.

Comment: Do you mean Open Authentication in the first paragraph?

Nancy: Yes. I will change it and save the document as revision 1.

Motion: by Nancy Cam-Winget

Instruct the editor to include the text included in document 02/662r1 as Clause 5.9.3.1

Second: Jesse Walker

Discussion:

None

Vote: 31-0-5 Passes

Submission: Tom Maufer – document 02/663 – Clause 8.4 Suggested Changes

Rewrote all Clause 8 informative text to make it flow better and easier to understand. Putting all the informative text in one place adds value. Clause 8.4.1.1 is the suggest place to put this text.

The text does not include IBSS mode at this point. If this is desired, then that could be added. I did not add IBSS at this point because IBSS was not as stable as infrastructure.

Discussion:

Jesse: Is it your intent that this section be labeled informative?

Tom: Yes

Jesse: Why not put this in Clause 5.

Tom: No preference, but it is lengthy.

Jesse: Is the intent to delete the existing informative text?

Tom: Yes, that action is for the editor. I can identify the parts that need to be removed.

Jesse: That would be welcome.

Comment: This text seems more appropriate for clause 8 rather than clause 5.

Comment: There is a discrepancy with the EAPOL replay counters between the text and state diagrams.

Tom: I will update this to match the proper operation.

Comment: If added to clause 5, then clause 5 would mostly be security.

Comment: How do you plan to maintain when changes are made to text elsewhere in the draft?

Tom: Good question. At least if the text is all in one place, it would be easier to update.

Motion: by Nancy Cam-Winget

Instruct the editor to insert Clause 8.4.1.1 as provided in document 02/663r0

Second: Merwyn Andrade

Discussion:

Comment: Is it clear in the document that it is informative?

Motion to amend by Dave Nelson:

Instruct the editor to insert Clause 8.4.1.1 as provided in document 02/663r0 as informative text.

Second: Larry Green

Discussion:

None

Vote: 28-1-3 Passes

Main Motion

Instruct the editor to insert Clause 8.4.1.1 as provided in document 02/663r0 as informative text.

Vote: 27-0-4 Passes

Submission: Dan Harkins – document 02/689r0 – Re-authentication when Roaming

Discussion:

Comment: What happens if an AP supports both?

Dan: If a client supports both, and it is pre-authenticated, then there is not point in doing re-authentication.

Comment: There is a way of doing this without changing the draft.

Dan: We need defined behavior in the draft or it won't be done. Or a proprietary mechanism will be used.

Comment: 802.1X states an EAP-Success can be sent at any time.

Jesse: When the AP receives the context, it doesn't know where it came from and therefore it can't be trusted.

Dan: The model could allow the context to come from the AS.

Dan: I'm agnostic on the crypto-context transfer protocol. This is out of scope of this draft.

Chair: Your suggesting a change that doesn't appear to be needed. We may need to revisit the text to ensure we are not disallowing this.

Motion to be presented tomorrow.

Straw Poll:

A form of re-authentication that assumed the PMK has roamed with the user is desirable.

Result: 22-7-12

Submission: Marty Lefkowitz – document 02/686 (02/684 presentation) Extended Keymapping

Discussion:

Comment: Why do you want to do this?

Marty: It could be a different group key for different groups in the BSS.

Jesse: I applaud the attempt to increase the IV space. We need to ensure we don't break the re-key. We cannot detect forgeries of the group keys. This means that the encapsulation we are using to protect isn't applicable to all types of traffic.

Marty: How can traffic be forged?

Jesse: Anyone with a key can generate a multicast spoofed as an AP.

Marty: But the STA is already trusted – it has the key.

Comment: This doesn't make that forgery any worse.

Comment: This is partitioning the security space. How many bits do you have allocated to the Key ID?

Marty: 12 in addition to the 2 existing ones.

Comment: You said broadcast and multicast, did you mean simply multicast?

Marty: Both.

Comment: But broadcast is to everyone.

Jesse: Applicable to broadcast based applications

Marty: This allows TKIP and WEP to be operating on the same BSS without using the same key.

Marty: Please take a look at the text in document 02/686. I would like to make a motion tomorrow.

Comment: May I add a submission to the agenda?

Chair: Any objection to adding document 02/713 MLME delete keys text to the agenda?

None

Submission: David Johnston – document 02/713 MLME Delete Keys text

DJ: Text was missing from the draft.

DJ: Since the document is not on the server, we cannot vote on it today. Plan to make motion tomorrow.

Submission: David Johnston – document 02/611r6 Clarified CCM Diagrams

Discussion:

None

Motion by David Johnston

Instruct the editor to incorporate into the draft the changes described in document 02/611r6

Second: Jesse Walker

Discussion:

None

Vote: 22-0-3 Passes

Submission: David Johnston – document 02/699r0 Addresses As Integers

DJ: Since the document is not on the server, we cannot vote on it today. I plan to make the motion tomorrow.

Discussion:

Jesse: Why are we comparing these as numbers? Why not simply as octet strings?

DJ: Because we need to compare magnitude, and we need a consistent mechanism to do so.

Comment: It seems we should be able to compare octet by octet.

DJ: 802.11 is a little endian world.   Also, 802.15 is doing it this way.

Jesse: Another place this is needed is in the PTK derivation.

POI: Could we prioritize the submissions to present the ones we can make motions on now?

Chair: Yes, good idea

Submission: David Johnston – document 02/701r0 TKIP Key Mixing Code

Discussion:

There are errors in the description of the byte transmit order. DJ will edit and re-submit.

Submission: Tim Moore document 02/645 – TKIP Replay Protection Rules

Tim: There are out of order issues when using Power Save or Contention Free modes.

Discussion:

Comment: Can another replay counter be used for Contention Free traffic?

Tim: I tried this, but it became very complicated.

Comment: How many counters?

Tim: The size is now fixed to 4 bits. We couldn't come to an agreement in Herndon on how may replay counters are required.

Comment: Did you mean multiple of 2 or power of 2 in your text?

Tim: Power of 2.

Comment: Even if there is only support for 2 replay counters, that's still 12K of cache for 100 STAs. This may be an issue for legacy equipment.

Comment: Why not use the TGe mechanism for TKIP?

Tim: We can't break the 1999 spec.

Jesse: It seams like we need to redesign the mixing function.

Chair: Further discussion?

None

Motion by Tim Moore

   Incorporate document 11-02-645r1 into the TGi draft.

Second: Mike Moreton

Discussion:

Comment: Opposed - Trying to solve too many things. This is beyond the scope of TKIP.

Tim: This issue has been there for a while and nobody has suggested a solution. The number of counters was agreed upon in previous meeting. If we don't fix, we will ship a broken product.

Comment: Support on legacy equipment may be an issue due to resource requirements.

Comment: There is a general problem of referencing TGe in the draft. A mechanism is needed

Vote: 5-12-7 Fails

Submission: Tim Moore document 02/646 – EAPOL-Key

There was a meeting with NIST after the TGi meeting in Herndon last month. The outcome of the meeting is that the HMAC-MD5 we use would never get approval. This document incorporates what NIST recommends.

Discussion:

Comment: This would be a great improvement. We have so many algorithms.

Motion by Tim Moore:

Instruct the editor to include the following changes into the TGi draft:

Add to References

RFC 3394, Advanced Encryption Standard (AES) Key Wrap Algorithm, September 2002

RFC 2104, HMAC: Keyed-Hashing for Message Authentication, February 1997

Changes in Section 8.5.2

Change text in Version 2

2. Version 2 indicates:

a) HMAC-SHA1-128 (RFC2104) is the EAPOL-Key MIC.

b) AES Key Wrap (RFC3394) is the EAPOL-Key encryption algorithm used to protect the distributed GTK.

Change text in Key MIC,

Key Descriptor Version 2: HMAC-SHA1-128 (RFC2104); FIPS 198a (RFC2104) defines this function with the output truncated to 128bits.

Change text in **Key Data Length**

Note: For Group Keys, the Key Data Length will be the same as the Key Length field for Key Descriptor Version 1 and Key Length + 8 octets for Key Descriptor Version 2.

Change text in **Key Data**

Key Descriptor Version 2: AES Key Wrap (RFC3394) is used to encrypt the key material field using the EK field from the derived PTK. The default initial value for the AES Key Wrap shall be used and shall be put in the least significant octets of the Key IV field which shall be padded with 0.

Second: Clint Chaplin

Discussion:

Jesse: This is the minimum that needs to be done to sell products into the federal government space.

Comment: Is all of this unencumbered?

Jesse: Yes.

Comment: If we implement this, are we guaranteed to be compliant?

Jesse: No, but if not done, we are guaranteed to be non-compliant.

Chair: Further discussion?

None

Vote: 27-0-2 Passes

Presentation: Tim Moore

The current text indicates that Open Authentication is mandatory for RSN, but this is not true for IBSS. Change "shall" to "may".

Comment: By saying "may", does that mean that none other shall be used?

Motion by Tim Moore:

Motion to make 802.11 open authentication optional by changing the text in the TGi draft to:

    5.4.3.2 since Open Authentication may be used

    7.2.3.10 Only Open Authentication frames may be used with RSN

    7.3.2.17, page 20 line 14 to

        1. A STA may use IEEE 802.11 open authentication

    8.4.1

        2. The STA may then use IEEE 802.11 open authentication

    8.4.6 an RSN-capable STA may use IEEE 802.11 Open Authentication

    8.4.7 and then may cause the MAC to send an IEEE 802.11 Open Authentication message

Second: Dave Nelson

Discussion:

None

Vote: 29-0-1 Passes

Motion by Tim Moore:

Instruct editor to change examples in 7.3.2.17 to

2.

30, // information element id, 48 expressed as Hex value
14, // length in octets, 20 expressed as Hex value
01 00, // Version 1
00 00 00 04, // CCMP as group key cipher suite
01 00, // pairwise key cipher suite count
00 00 00 04, // CCMP as pairwise key cipher suite
01 00, // authentication count
00 00 00 01 // 802.1X authentication
80 00 // No capabilities

3.

30, // information element id, 48 expressed as Hex value
12, // length in octets, 20 expressed as Hex value
01 00, // Version 1
00 00 00 01, // WEP as group key cipher suite
01 00, // pairwise key cipher suite count
00 00 00 00, // No pairwise key cipher suite
01 00, // authentication count
00 00 00 01 // 802.1X authentication

Second: Clint Chaplin

Discussion:
None

Vote: 18-0-3 Passes

Motion by Tim Moore:

Instruct the editor to delete 2nd paragraph from Clause 8.4.2 of the TGi draft.

Comment: If not in the IE, isn't there a default?
Tim: Yes. There shouldn't be a special case for IBSS any longer.

Second: Jesse Walker

Discussion:
Tim: We fixed the IBSS case in Monterey, but we didn't remove this text.

Further discussion?
None

Vote: 23-0-2 Passes

Motion by Tim Moore:

Instruct editor to make the following changes to the TGi draft:

    Add to Clause 8.4.3 of the TGi draft

        It is invalid in an RSN to specify None as the Pairwise cipher.

    Delete 1st informational note from 8.4.4

    Delete 3rd item from list in 8.4.6.1

Second: Jesse Walker

Discussion:

Comment: Does your draft have an 8.4.4?

Jesse: That was an editorial problem that has been fixed.

Comment: A TSN is valid with group only keys. An RSN is not valid with group only keys

Vote: 22-0-1 Passes

Submission: Tim Moore – document 02/681 Section8 Authenticator State Machine Changes

This submission fixes errors in the Authenticator State machine.

Message 4 is now unencrypted for the first handshake.

Discussion:

Comment: Does the Supplicant need to disassociate itself on an EAPOL MIC failure?

Tim: It was like that at one time, but has been changed. The behavior now is to disassociate only on timeout.

Motion by Tim Moore:

    Instruct the editor to incorporate document 02/681 into the TGi draft with spelling corrections

Second: Jesse Walker

Discussion:
None

Vote: 18-1-1 Passes

Motion by Jesse Walker:

    In Table 2 change "WEP" to "WEP-40" and document this as 40-bit WEP.

    Rationale: To explicitly designate the WEP key size being configured.

In Table 2 add a selector "00:00:005   WEP-104" and change the range of reserved values to "6-255."

Rationale: To explicitly designate the WEP key size being configured.

Add text to "8.2.2.3 WEP state" *and* "8.2.2.4.3. WEP seed construction" *to document WEP-104 to the same extent as WEP key usage. More particularly, in 8.2.2.3 add a sentence* "WEP-104 shall use 104-bit encryption keys." *and in 8.2.2.4.3 add the sentence* "Bits 0 through 103 of the WEP key correspond to bits 24 through 127 of the WEP-104 seed, and bits 0 through 23 of the IV correspond to bits 0 through 23 of the WEP-104 seed, respectively."

Rationale: To explicitly document 104-bit WEP usage.

Second: Clint Chaplin

Discussion:

Comment: The Table 2 change has no affect on legacy equipment, right?

Jesse: Right, it is just specifying them so that we can tell them apart.

Vote: 22-0-0 Passes

Motion by Jesse Walker:

Add the qualifier "(Informative)" *to clause* "8.1.6 RSN assumptions and constraints".

Rationale: 8.1.6 discusses the environment required for security, not 802.11.

Second: Nancy Cam-Winget

Discussion:

None

Vote: 20-0-1 Passes

Motion by Jesse Walker:

Remove the qualifier "(Informative)" *from clause* "8.4.6.1. Preauthentication and key management".

Rationale: While this clause applies wholly to 802.1X, it applies only to the part specified by 802.11i. This behavior needs to be normative. Whether or not it is procedurally valid to define 802.1X protocols within 802.11i will be resolved by letter ballot comment.

Remove the qualifier "(Informative)" *from clause* "8.4.8 RSN key management in an ESS".

Rationale: While this clause applies wholly to 802.1X, it applies only to the part specified by 802.11i. This behavior needs to be normative. Whether or not it is procedurally valid to define 802.1X protocols within 802.11i will be resolved by letter ballot comment.

Remove the qualifier "(Informative)" *from clause* "8.5 Keys and key distribution" *and from all its subclauses, except for* "8.5.3.10 Example 4-way handshake", "8.5.3.11 4-way handshake analysis", "8.5.4.3 Group key distribution implementation considerations", and "8.5.4.4 Example Group key distribution".

Rationale: While this clause applies wholly to 802.1X, it applies only to the part specified by 802.11i. This behavior needs to be normative. Whether or not it is procedurally valid to define 802.1X protocols within 802.11i will be resolved by letter ballot comment.

Second: Clint Chaplin

Discussion:

None

Vote: 20-0-1 Passes

Recess until 1:00pm tomorrow

Tuesday November 11, 2002

Resume 1:04pm

Submission: Dave Halasz – document 02/647 PICS

Discussion:

None

Motion by Nancy Cam-Winget

Instruct the editor to include document 02/647r2 into the appropriate Annex of the TGi draft.

Second: Jesse Walker

Discussion:

None

Vote: 22-0-2 Passes

Submission: Dan Harkins – document 02/696 (689 presentation) Re-authentication

Discussion:

None

Motion by Marty Lefkowitz

Instruct the editor to include document 02/696 into the TGi draft

Motion withdrawn

Chair: Any objection to postponing the discussion on 02/696?

None

Submission: David Johnston – document 02/713 Delete Keys

Discussion:

None

Motion by David Johnston

Instruct the editor to include document 02/713 into the TGi draft

Second: Jesse Walker

Discussion:

Comment: Since this is referenced many times in the draft, we need it.

Chair: Any further discussion?

None

Vote: 25-0-5 Passes

Submission: David Johnston – document 02/699 Addresses as Integers

Discussion:

None

Motion by David Johnston

Instruct the editor to include document 02/699r0 into the TGi draft

Second: Albert Young

Discussion:

Jesse: POI: Is the intent to apply this algorithm to all places where MAC addresses are compared in the draft?

DJ: The intent was to apply the algorithm to the immediate preceding section.

Comment: It is good to eliminate the ambiguity, but it is incomplete because it doesn't address the test vector changes that would be required.

DJ: We will not be able to change this and get it voted in before the Letter Ballot vote.

Comment: The current max/min implementations utilize octet compare. This is inconsistent with those operations.

DJ: So should we make the TKIP compares use this? If we do, then we have inconsistency with 802.15.

Jesse: I'm not sure if there are any differences between the octet string compare and this.

Comment: They are different. This proposal uses Little Endian

Any further discussion?

None

Vote: 10-5-17 Fails

Submission: David Johnston – document 02/701 TKIP key mixing

Discussion:

None

Motion by David Johnston

Move that the editor incorporate into the draft the text described in document 02/701r0 TKIP Mixing Code and Vectors

Second: Jesse Walker

Discussion:

Comment: How are these different from what is in the current draft.

David: Only in how they are presented.

Comment: The code has a copyright on it. Is that an issue?

David: That should be removed. The code says to replace with IEEE header.

Comment: I still find it confusing. Do we really need all this C code?

David: Yes, I strongly encourage leaving the C code. It is less ambiguous than the text.

Jesse: Is the intent for the C code to go into the annex?

David: The intent is to have it go into section F.1

Comment: How is this code better than the existing code.

David: It compiles without errors. Endian of TK is unambiguous.

Comment: In favor, C code is preferred when test vectors don't match.

Vote: 15-1-18 Passes

Submission: David Johnston – document 02/665r3 802.1X Misuses

Discussion:

Comment: Are the 4-way handshake messages included as well?

David: Those use EAPOL-Key messages. I don't touch those.

Comment: How does this impact WPA

David: If WPA chose to follow this, then, yes, the encapsulation over of the air of the 802.1X frames would need to change.

Comment: The changes to the encapsulation results in changes to the state machines. Does this update the state machines as well?

David: How does this affect the state machines?

Comment: The Association Request initiates 802.1X.

David: I thought the EAPOL-Start did.

Comment: Not in 802.11

Comment: So this will slow down WPA?

David: This is not a proposal for the WiFi Alliance, this is for TGi.

Comment: If this were adopted, would it change the text we adopted yesterday?

David: Yes.

Comment: Can these two motions be de-coupled? This sounds clean, but late in the game.

David: I arrived late in the game.

Comment: You deleted a bullet item from 8.4.2.

David: If you have a WEP STA that understands RSN key mgt, then you should be able to use it.

Comment: Why is there an ambiguity on the LLC header?

David: Because proprietary protocols violate the 802 std requiring an LLC header.

Comment: Why is 802.1X above the LLC?

Jesse: That was decided in the San Jose TGi meeting.

Comment: I like the new layering. The Encapsulation changes the state machines.

Motion by David Johnston.

Move that the editor incorporate into the draft the changes described in document 11-02-697r0 (Relayering).

Second: Bob Moskowitz

Discussion:

Jesse: In favor – This cleans up what we are doing. If we find changes that affect what we've agreed upon, we can fix via Letter Ballot processing.

Comment: I'm concerned about the changes required to the state machine.

Comment: Is it possible to make these changes and still go to Letter Ballot?

Jesse: Don't know if I can get them in this week. By tomorrow I will know. If not, are we blocked from going to Letter Ballot?

Chair: We could ask for an electronic Letter Ballot. Results may be after Jan meeting.

Comment: There are two options; a 15 day ballot, or Jesses gets up in front of the WG and makes announcement.

Chair: There is a risk of appearing incomplete in front of the Working Group.

Comment: There is risk also by additional Letter Ballot comments.

Comment: There are about a dozen sections in the draft that are changed by this, but they are not extensive.

Jesse: Concerned that we keep adding more and more. Lost about a week's worth of edits last night.

Comment: For - However, only 6 days available to get Letter Ballot out before Ft. Lauderdale meeting.

Chair: If results came out after the Ft. Lauderdale meeting, we would have nothing to do at that meeting.

Any further comments?

None

Vote: 27-0-9 Passes

David Johnston's second motion withdrawn due to Tim's comments that it will break the state machines.

Submission: David Johnston – document 02/643 Tx/Rx Pseudo Code

Discussion:

Comment: Are aHavePtk and aHaveGtk arrays indexed by MAC address?

David: Yes. I need to clarify this in the document.

Motion by David Johnston:

Move that the editor incorporate into the draft changes described in document 11-02-643r3-TxRxPseudoCode, with the additional text added to section 10.3.7.1.4. aHaveGTK shall be set to FALSE and aHavePTK shall be set to FALSE.

In addition, clarify that aHaveGTK and aHavePTK shall be arrays indexed by MAC address.

Second: Tim Moore

Discussion:

None.

Vote: 27-0-0 Passes

Submission: Dan Harkins document 02/696r2 Re-authentication

Discussion:

Comment: I would prefer a little more time to review. A technical change of this magnitude is risky at this point. Perhaps make this optional.

Dan: Adding this change won't break any existing implementations.

Comment: I'm not convinced that we need it.

Comment: When we introduce things that haven't been well analyzed, we tend to get security holes. What are the trust relationships that need to be in place for the PMK to be shared?

Dan: We've already hashed out the sharing of the PMK.

Chair: This is not the correct place to define the security context transfer protocol.

Comment: Without this change, there is no mechanism to get the PMK to another AP if a secure method ever arrives.

Comment: This fixes some error cases on pre-authentication. There are security issues with sharing the PMK, but people are going to do it anyway. The specification supports this, but it's fuzzy.

Dan: We're already sharing the PMK. More than 2 parties already know this so that argument is weak.

Jesse: I have concerns about whether we have properly defined pre-authentication.

Comment: If one side deleted the keys, then went into an error condition. There is no recovery mechanism if the AP has keys but STA does not.

Comment: Does this affect the state machines?

Comment: No.

Chair: Would the Task Group like more time to review before the motion is made?

Consensus: Yes.

Motion by Tim Moore:

Motion to instruct editor to incorporate the following changes

Delete first informative note from 8.5.6.2

it is a duplicate of 8.5.2 descriptor type

To change in Section 7.3.2.17

"An AP may specify the selector 00:00:00:0 "None" for a pairwise key cipher suite if it supports none of the pairwise cipher suites proposed by the STA."

to

"An AP may specify the selector 00:00:00:0 "None" for a pairwise key cipher suite if it does not support any pairwise cipher suites."

Insert in section 7.3.2.17 the following sentence before "The format of the capability Information field is as illustrated in figure 6".

"The value of the capability information field shall be taken as 0 if the field is not available in the RSN information element"

Second: Clint Chaplin

Discussion:

None:

Vote: 29-0-2 Passes

Motion by Tim Moore:

Motion to instruct editor to incorporate the following changes into the TGi draft

After verifying with ANA and correcting any values, add to table 18 the following codes and change 15-65535 reserved to 24-65535 reserved

15   4-way handshake timeout
16   Group key update timeout
17   Information element in 4-way handshake different from (Re-)associate request/Probe response/Beacon
18   Multicast Cipher is not valid
19   Unicast Cipher is not valid
20   AKMP is not valid

21 Unsupported RSNE version
22 Invalid RSNE Capabilities
23 IEEE 802.1X Authentication failed

Change 8.4.3

If an RSN-capable AP receives a (Re)Association Request with RSN asserted but no RSN IE, it shall decline to associate with the STA initiating the Request, rejecting the request with an Association Response conveying reason code one (1).

to

If an RSN-capable AP receives a (Re)Association Request with RSN asserted but no RSN IE, it shall decline to associate with the STA initiating the Request, rejecting the request with an Association Response.

Change 8.4.6

The AP shall respond to an IEEE 802.1X authentication failure by sending the STA a Disassociation message with reason code one (1).

to

The AP shall respond to an IEEE 802.1X authentication failure by sending the STA a Disassociation message.

Second: David Johnston

Discussion:

None

Vote: 29-0-2 Passes

Presentation: Frank Ciotti – Changes to 5.4.3.2 Deauthentication

This change is required to indicate the proper action to be taken on an 802.1X Controlled Port when a STA is Deauthenticated and its related Association is terminated.

Motion by Clint Chaplin

Instruct the editor to change the text of clause "5.4.3.2 Deauthentication" from:

The deauthentication service is invoked whenever an existing Open or Shared Key Authentication is to be terminated. Deauthentication is an SS. In an RSN, since Open Authentication is always used, deauthentication is still used. Deauthentication is unrelated to upper layer authentication, it is provided a MAC sub layer function, whereas upper layer authentication lies outside the MAC.

In an ESS using Open or Shared Key Authentication, 802.11 authentication is a prerequisite for association. Hence the act of deauthentication causes the station to be disassociated. The deauthentication service may be invoked by either authenticated party (non-AP STA or AP). Deauthentication is not a request; it is a notification. Deauthentication shall not be refused by either party. When an AP sends a deauthentication notice to an associated STA, the association shall also be terminated.

In an RSN using Upper Layer Authentication, deauthentication may result in the 802.1X controlled port for the station being disabled.

to:

The deauthentication service is invoked whenever an existing Open System or Shared Key MAC Layer Authentication is to be terminated. Deauthentication is an SS.

In an ESS using Open System or Shared Key Authentication, 802.11 MAC Layer authentication is a prerequisite for association. The deauthentication service may be invoked by either authenticated party (non-AP STA or AP). Deauthentication is not a request; it is a notification. Deauthentication shall not be refused by either party. Deauthentication causes any association for the deauthenticated station to be terminated as well.

In an ESS RSN, Open System Authentication is required for MAC layer authentication. In this environment, deauthentication results in any association for the deauthenticated station to be terminated, and also results in the 802.1X controlled port for that station being disabled. The deauthentication notification is provided to 802.1X via the MAC sub layer.

Second: Nancy Cam-Winget

Discussion:

Comment: Is "disabled" the correct term?

Comment: Yes

Vote: 30-0-1 Passes

Comment: Are changes to Figure 8 planned?

Comment: We added changes and then removed them at some point.

Comment: The text still refers to Class 4 frames.

Motion by David Johnston

Instruct the editor to remove from the draft references to Class 4 frames from Clause 5.5 section D.

Second: Nancy Cam-Winget

Discussion:

None

Vote: 27-0-1 Passes

Presentation: Frank Ciotti – Addition of `dot11RSNStatsSelectedAuthenticationSuite` to the 802.11i MIB.

This object is useful for implementations to indicate the Authentication Suite selected by a STA.

Motion by Dorothy Stanley:

Instruct the editor to insert the following MIB object into the 802.11i MIB as **dot11RSNStatsEntry 5**, *and renumber the objects* **dot11RSNStatsEntry 5-14** *as* **dot11RSNStatsEntry 6-15.**

```
dot11RSNStatsSelectedAuthenticationSuite OBJECT-TYPE
    SYNTAX          OCTET STRING (SIZE(4))
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION

        "The Authentication Suite the station selected during association.  The
value consists of a three octet OUI followed by a one octet Type as follows:


      OUI       Value  Authentication Type      Key Management Type
    --------    -----  -------------------      -------------------
    00:00:00      0    Reserved                 Reserved
    00:00:00      1    Unspecified authentication  802.1X Key Management
                       over 802.1X
    00:00:00      2    None                     802.1X Key Management
                                                using pre-shared Key
    00:00:00    3-255  Reserved                 Reserved
     Vendor      any   Vendor Specific          Vendor Specific
      other      any   Reserved                 Reserved"


    ::= { dot11RSNStatsEntry 5 }
```

Second: David Johnston

Discussion:

None

Vote: 29-0-0 Passes

Submission: Mike Moreton – document 02/685r0 Changes to the MLME (Re)Associate Interface

Discussion:

None

Motion by Mike Moreton:

Instruct the editor the incorporate document 02/685r0 into the TGi draft.

Second: Jesse Walker

Discussion:

None

Vote: 26-0-6 Passes

Submission: Mike Moreton - document 02/683r0 Removing the RSN Bit from the Capabilities Field

Discussion:

Comment: In a TSN, legacy equipment can only use a group key.

Mike: A legacy STA could include an RSNE without a capability. But there was no way of selecting WEP, so it was left out. This makes it clear.

Comment: Do any of the changes we voted in yesterday address this?

Mike: This change allows WEP to be selected as a pairwise cipher suite.

Motion by Mike Moreton.

   Instruct the editor to incorporate the changes indicated in document 02/683r0 into the TGi draft.

Second: David Johnston

Discussion:

None

Vote: 28-0-3 Passes

Motion by Jesse Walker

   Instruct the editor to fix MLME-SETKEYS.request in 10.3.11.1.2 by:
- *Removing Authenticator/Supplicant argument from primitive syntax*
- *Removing Authenticator/Supplicant argument in argument table*
- *Removing Threshold parameter from KeyIdentifier argument table*

Second: David Johnston

Discussion:

None

Vote: 31-0-0 Passes

Submission: Dan Harkins document 02/696r2 Re-authentication

Discussion:

Comment: It is not clear who initiates the transfer.

Dan: I wanted to allow for the protocol to specify which device initiates the transfer. Indicating which device is outside the scope of this document.

Chair: Any further discussion:

None

Motion by Marty Lefkowitz

Instruct the editor to incorporate the text from document 02/696r2 into the TGi draft.

Second: Areg Alimian

Discussion:

Comment: Against - In section 8.5.3.11 this is overloading the 4-way handshake and will cause no votes. It should use its own mechanism.

Further discussion?

None

Vote: 4-11-19 Fails

Submission: Marty Lefkowitz – document 02/733r0 TKIP Mixing Suggested Changes

Comment: Changing the second byte exposes weak keys again.

Comment: This can be derived anyway.

Jesse: Can legacy hardware support this many Key IDs?

Marty: Setting the extra bits to zero allows legacy hardware to operate.

Comment: If they can't support more than 4, this won't hurt them. If they do, they will want this.

Comment: We've already added so much to TKIP that it cannot be supported on some vendor's equipment.

Comment: Is this addressing any Letter Ballot comments?

Marty: No?

Comment: I'm concerned that we're going to create more comments. If there were no Letter Ballot comments regarding this, why are we doing it?

Marty: No motion

Submission: Dorothy Stanley – document 02/747r0 MIB Multicast Description Update

Motion by Dorothy Stanley

Instruct the editor to incorporate document 02/747r0 into the TGi draft

Second: Jesse Walker

Vote: 31-0-1 Passes

Comment: Has anyone thought about security issues with the MIB?

No.

Motion by Nancy Cam-Winget

Instruct the editor to prepare the draft for Letter Ballot.

Second: Dorothy Stanley

Discussion:

None

Vote: 34-0-1 Passes

Chair: Jesse will not be able to have the draft ready for the 8:00am tomorrow. I suggest we recess until Thursday. We still need a motion to go to Letter Ballot.

Chair: We shall recess until 8:00am on Thursday at which time we will determine if we need to recess further.

Comment: Have we addressed all of the previous Letter Ballot comments?

Chair: No.

Chair: Recess until 8:00am Thursday

Thursday November 13, 2002

Resume at 8:09am

Chair: The editor has incorporated all the changes that we have adopted up to now. We have plenty of time to resolve any inconsistencies in the text before going to letter ballot. Are there any motions or discussion?

- Jesse Walker: 3 motions
- David Johnston: 1 motion (reconsideration and submission)
- Tim Moore: 3 motions
- Paul Lambert: May have one minor motion
- Tom Maufer: May have one minor motion

Motion by Jesse Walker

Instruct the editor to strike the text of Clause 5.3 from draft 2.6.

Second: Merwyn Andrade

Discussion:

None

Vote: 27-0-0 Passes

Motion by Jesse Walker

Instruct the editor to strike the following text from draft 2.6:

Change the text of the first paragraph of clause "5.4 Overview of the services" from:

There are nine services specified by IEEE 802.11. Six of the services are used to support MSDU delivery between STAs. The other three services are used to control IEEE 802.11 LAN access and to provide data confidentiality.

to:

There are ten services specified by IEEE 802.11. Three of the services are used to support MSDU delivery between STAs. The other seven services are used to control IEEE 802.11 LAN access and to provide data security."

Second: David Johnston

Discussion:

None

Vote: 27-0-0 Passes

Motion by Jesse Walker:

Instruct the editor to strike the following text from draft 2.6:

6.1.2 Security services

Change the enumerated list in Clause 6.1.2 from:

    a) Confidentiality;
    b) Authentication; and
    c) Access control in conjunction with layer management.

to:

    a) Confidentiality;
    b) Authentication;
    c) Access control in conjunction with layer management. Special cases of this latter function are
    d) Data authenticity, and
    e) Replay detection.

Second: Clint Chaplin

Discussion:

Comment: Are you suggesting that we leave the text as is?

Jesse: Correct. The current text changes the 1999 std. This motion leaves as in the 1999 std.

Vote: 28-0-1 Passes

Motion by David Johnston:

Move to reconsider the incorporation of document 02/645r2 into the draft.

Second: Clint Chaplin

Discussion:

Tim: The priority is passed in the MA_UNITDATA, but not over the air.

Comment: Suggest changing from 1 to 4 octets

Tim: Agree

Comment: Where is the priority carried in the frame?

Tim: It is known by whether the frame is transmitted during the Contention or Contention Free period.

Comment: I'm not sure if vendors will use this consistently if there is not specific field in the MPDU.

Tim: The two values are Contention and Contention Free. The data is placed in two queues based on that value.

Comment: But Contention data could be sent during the Contention Free period if there is no PCF data to send.

Comment: We could say that we don't support QoS for TKIP.

Chair: If this motion were to pass, all that it means that we can bring this up again, not that we adopt it. Passing this would allow further work.

Comment: If reconsideration passed, the old motion comes back on the table immediately.

Chair: Yes, we would need to postpone it.

Comment: I call the question

Chair: Any objection to calling the question?

None

Vote on calling the question: 30-0-0 Passes

Vote on motion to reconsider: 28-1-0 Passes

Motion to by Dorothy Stanley

Move to postpone discussion of document 02/645r2 into the draft until the remaining motions are made.

Second: Nancy Cam-Winget

Vote: 24-0-3 Passes

Motion by Tim Moore

Move to change the following in section 8.3.2.4.2

- *Remove text* "BSS case."
- *Delete text from* "IBSS Case*" to item 4* "4. Log details of the MIC failure."

This is required because the IBSS case is same as the ESS case and the IBSS case is from an older version of IBSS RSN

Second: Jesse Walker

Discussion:

None;

Vote: 31-0-0 Passes

Motion by Tim Moore

Move to remove item 3 from 7.3.2.17

This is required because it allows APs to support non-RSN stations in an RSN, which is not correct.

Second: Clint Chaplin

Discussion:

None:

Vote: 32-0-0 Passes

Motion by Tim Moore

Move to delete from section 8.7.4

"// Else check for 802.1x before throwing away frame

else if (Ethertype is 802.1X and DA is a unicast address addressed to this STA)

then

Receive the 802.1x frame without protections"

This is required because it will never happen because if 802.1X should be unencrypted then aHavePTK is false which doesn't get here

Second: David Johnston

Discussion:

Comment: What about the possible situation where a key is lost? How do you recover?

Tim: If you receive a message you cannot decrypt, send a De-Auth back to the STA.

Comment: This seems like a DoS attack.

Tim: There are so many local DoS attacks already, we decided this one didn't matter.

Vote: 31-0-1 Passes

Submission: Paul Lambert document 02/749r0 Key Hierarchy Test Vectors

The existing text vectors were confusing

Motion by Paul Lambert:

Move to replace the key hierarchy test vectors in annex F with document 02/749r0.

Second: Jesse Walker

Discussion:

None:

Vote: 28-0-1 Passes

Paul: Just an observation - we could reduce the amount of text in the document by removing the test vectors for HMAC-MD5 and SHA-1 since they are available in the referenced RFCs.

Motion by Tom Maufer:

Instruct the editor to strike the second paragraph from Clause 5.4.3.2 of draft version 2.6.

Second: Nancy Cam-Winget

Discussion:

None.

Vote: 27-0-2 Passes

Chair: Are there additional motions other than the one on document 02/645?

None.

Chair: The next order of business is the document 02/645 motion, however more time is needed to craft the motion.

Chair: Any objection to recess until 10:30am

Yes

Motion by Dave Nelson

Move to recess until 10:30am

Second: Jesse Walker

Non-debatable

Vote: 27-2-0 Passes

Chair: Any objection to me taking a picture?

None

Resumed at 10:30am

Chair: I have two motions that I would like to have someone make; one to go to LB after lunch, the other is to make the draft available for purchase.

Chair: The first order of business is the motion to reconsider on document 02/645.

Comment: I believe there is an issue with modifying a motion that being reconsidered. (Original motion was for 645r1, reconsidered motion is for 645r2).

Reconsideration of the motion to incorporate document 02/645r2 into the draft.

Chair: Any discussion on the reconsideration of the motion?

None.

Motion by Tim Moore

Move to instruct editor to incorporate 645r2 with the following changes:

Replace diagram by

DA	SA	Priority	0	Data	MIC

And update text following diagram to:

Note: the DA, SA, a one octet Priority field and 3 octet reserved (0) field are used for calculating the MIC and are not transmitted. The Priority field shall be 0 and reserved for future use for IEEE 802.11 traffic class.

And delete change to section 8.3.2.4.4 item 5

Second: Clint Chaplin

Discussion:

Comment: Against – This is different than the mechanism used in CCMP. Using one octet here, CCMP uses 4 bits. I don't want to see this go into the AES modes.

Comment: For - TKIP and CCMP are very different. Fixes a problem with TKIP.

Comment: For – However, the header field is only 4 bits. Can this be changed to use 4 bits?

Comment: But this doesn't go over the "wire".

Comment: How can the receiver check the MIC if the priority is not sent over the air?

Comment: It is only used in the MIC calculation.

Comment: But this is different than the mechanism used in AES modes where the actual priority is used.

Comment: I Call the question

Chair: Any objection?

None

The question is called

Vote: 24-5-4 Passes

Motion by Jesse Walker

Instruct the editor to strike the text in Clause 6.2.1.2.2 of draft 2.6

Second: Mike Moreton

Discussion:

None

Vote: 29-0-2 Passes

Presentation: Taegon Park – Changes to Clause 8.1.5

Discussion:

Comment: We should include a new item in the list instead of making changes to the existing text.

Comment: Is the intent to more completely describe the Open Authentication requirement between ESS and IBSS modes?

Taegon: Yes

Chair: Do we want to try to craft this text now?

Comment: I would prefer to resolve this in Letter Ballot comments.

Chair: I disagree that this needs to be fixed in LB.

Submission: Gunnar Nitsche – document 02/718r0 On SC in Computing CCMP MIC

Discussion:

Comment: Does it matter if we voted on this before?

Comment: That was a different meeting.

Comment: I made this motion before. If the SC field is removed, there are fragment attacks that could be used.

Gunnar: The PN is incremented for every fragment

Comment: But the PN in monotonic.

Comment: The PN doesn't exactly reflect all fragments.

Comment: The PN doesn't reflect the sequence over the air. It's not a replay issue, but a re-order issue.

Gunnar: I'm not sure what security implications are, but I know what the implementation implications are.

Straw Poll

The Sequence Control should be removed for MIC computation in 8.3.4.4.3 of TGi draft

Result: 1-15-22

Chair: Are there any further Motions?

Comment: I have a presentation, but no motion

Motion by David Johnston

　　Move to instruct the editor to prepare draft version 3.0 for Letter Ballot

Second: Dorothy Stanley

Discussion:

None

Vote: 34-0-0 Passes

Chair: After the draft has been on the server for an hour, we need to vote within the Task Group to go to Letter Ballot.

Presentation: David Johnston – document 02/770r0 Passphrase Hashing Time

Discussion:

Comment: You only need to perform this at the time the passphrase is entered, not each Association.

Comment: So the options are; wait for the operation to be performed, add hardware assist, or tweak the algorithm to make it faster.

Comment: The crypto guys wanted 2^{20} bits, I talked them down to 2^{12} bits.

Comment: Other implementations are using much smaller numbers than 4096.

Comment: This is useful information for implementers. This computation only happens when "configuring" the system.

Comment: You have to assume your attacker has a large amount of resources.

Presentation: Dan Harkins – Figure 16 of draft 2.5 – Extended IV

Dan: The extended IV is redundant. I'm concerned that people will use this bit to detect that the packet is TKIP instead of performing the address lookup.

Comment: The Ext IV is used simply to indicate that the IV is extended, not to indicate TKIP.

Dan: The recipient should already know if the frame is TKIP, and therefore contains the Extended IV without this bit.

Comment: You don't know if the frame is TKIP or WEP until you've done the address lookup.

Comment: But you need to do the lookup anyway to figure out the frame format.

Dan: This specifies ambiguous behavior.

Comment: Your address search will tell you if the frame is TKIP or WEP. There is no ambiguity.

Dan: I'm simply saying that it is extraneous.

Comment: Yes, but it could be useful for decoding.

Comment: You don't know until you've done the key lookup if there is an extended IV.

Comment: But you do know, by looking at the Ext IV bit.

No further discussion

Chair: I appreciate the work that Jesse is doing to prepare the draft

Chair: Any objection to recess until 2:00pm?

None

Resume: 2:00pm

Chair: Three motions are needed:

- TG vote to go to LB
- To make draft available for purchase
- Motion to adjourn

Chair: If we vote to go to LB, then I will bring the motion in front of the full WG for a vote at the Closing Plenary.

Comment: In Clause 8.5.3.3 of draft 3.0, there are 2 informative notes that were supposed to have been deleted.

Jesse: I prefer to address that in Letter Ballot.

Comment: This is not significant

Motion by Nancy Cam-Winget

   Move to forward TGi draft 3.0 to a Working Group Letter Ballot

Second: Clint Chaplin

Discussion:

Comment: Do you expect many questions from the WG?

Chair: In the first 2 Letter Ballots I received questions.

Jesse: Would an overview be helpful?

Chair: I don't think that is needed.

Comment: Where are we with LB35 comments?

Chair: In Herndon we addressed comments. I will update the submission I made in Sydney.

Comment: Were they all addressed?

Chair: Yes

Comment: Are all the Visio diagrams issues resolved?

Jesse: Not all

Comment: So will there be an issue making a PDF out of this?

Jesse: Yes

Comment: Can the **document** be re-issued with the diagram fix?

Chair: Is not having the diagram that significant? The text is still correct – the diagram is redundant.

Vote: 32-0-0 Passes

Chair: The TGi draft is needed by non-IEEE members for security analysis and WiFi Alliance efforts.

Motion by David Johnston

Move to make the TGi draft version 3.0 available for purchase through existing IEEE mechanisms.

Second: Jesse Walker

Motion to amend by Dave Nelson

Move to recommend to the IEEE 802.11 Working Group Chair that the TGi draft version 3.0 be made available to the general public for purchase through existing IEEE mechanisms.

Second: David Johnston

Discussion:

None

Vote: 31-0-0

Main Motion

Move to recommend to the IEEE 802.11 Working Group Chair that the TGi draft version 3.0 be made available to the general public for purchase through existing IEEE mechanisms.

Discussion:

Comment: If vendors start implementing based on this draft, there may be pressure not to change.

Chair: Valid concern, but speculative. We can't say what other groups may do. "Caveat emptor"

Jesse: If a hole is found, then we will fix it.

Chair: Cisco has always updated their implementations as the drafts get updated.

Comment: The draft needs to be reviewed, and there has been a problem with getting the drafts to the cryptographers in the past.

Comment: Will this be an addition to or a replacement to the cryptographic reviewers?

Chair: Addition to.

Chair: Further comments?

None

Vote: 31-0-1 Passes

Motion to Adjourn by David Johnston

Second: Clint Chaplin

Non-debatable

Vote: 33-0-0 Passes

IEEE P802.11
Wireless LANs
Minutes of Wireless LAN Next Generation Standing Committee Meetings

Date: November 12-15, 2002

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Abstract

Minutes of the Wireless LAN Next Generation Standing Committee meetings held during the IEEE 802 Plenary meeting in Monterey from Nov 12 through 15, 2002.

Executive Summary:

1. Update reports were received from MMAC, WIG, IAG and ETSI-BRAN, WG18
2. The PAR & 5C requesting a task group to amend 802.11a to add support for Japanese bands was completed.
   a. 13 comments were received from 802.11, SEC and other WGs
   b. All comments were resolved and a revised pair of documents approved by the WG
   c. SEC will vote on task group formation November 13
3. Presentations were made on MIMO, PAPR for OFDM, VOIP, Connectivity improvement for 11a, UWB channel model

Tuesday Nov 12   1:00 – 3:00 pm Attendance 90
:
1. TK Tan Presented the week's agenda (doc. 11-02/667r0)
2. Requested volunteer for secretary – no volunteers
3. Proposed Agenda for the week
   a. Agenda was accepted without objections
4. September (Monterey) WNG minutes (doc. 11-02/605r0) were reviewed by TK and accepted without comment

5. September (Monterey) WIG minutes (doc. 11-02/606r0) were reviewed by TK and accepted without comment
6. Takashi Aramaki provided an overview of activities from MMAC, BRAN 30
7. Amer Hassan provided and overview of IAG
8. TK Tan provided an overview of WIG
9. Bruce Kraemer provided status summary of comments received from LB43 for PAR & 5C requesting a task group to amend 802.11a to add support for newly allocated Japanese bands. (doc 11-02/668r1)
10. Meeting recessed

Tuesday Nov 12 7:00 – 9:30 pm Attendance 50
:
Bruce Kraemer led a discussion of hove to resolve comments received for LB43 for PAR & 5C requesting a task group to amend 802.11a to add support for Japanese bands. PAR & 5C were revised as a consequence
Associated Documents: PAR doc 11-02/564r3, 5c doc 11-02/565r1, Comments doc 11-02/762r0, Comment resolution doc 11-02/668r3.

As a result of this work a summary document was prepared for presentation to the WG11 plenary (doc 11-02/759r0). WG approved revised documents. (111/1/10)
After successful review in the plenary an additional summary document was prepared for the SEC (doc 11-02/764r0)

Alexi Gorokhov presented a paper on MIMO (doc 11-02/708)

Thursday Nov 14, 7:00 – 9:30 PM WNG   Attendance 52

1. Meeting called to order
2. Carl Stevenson provided an update on activities of WG 18 and answered questions fro the audience.
    a. Confirmed that the comment response for the Japanese band PAR was satisfactory with regard to preventing interference with the US Public Safety band.
    b. Requested Carl to address the new NPRM on DSRC at the January meeting
3. Jeff Foerster provided a summary of the UWB channel model activities from WG15 SG3a (11-02/774r0) amendment of the
4. Je Woo Kim presented a paper on a technique for reducing the PAPR of OFDM signals (11-02/670r0)
5. Tim Godfrey presented a proposal to develop a recommended practice for VOIP (11-02/732r0)
    a. Discussion showed some interest, concerns over possible project scope suggesting to stay away from CODECs, concern over rapid evolution of VOIP components, alternative proposal to pursue project for "common radio resource management"
    b. Straw poll of interest in possible formation of study group taken (yes-12/no-13/abstain-18)

6. Steve Halford presented a proposal and call for interest for possible amendments to extend the range of 802.11a (11-02/777r0)
    a. Straw poll of interest in possible formation of study group taken (yes-15/no-17/abstain-13)
7. Standing Committee was adjourned for the week.

IEEE P802.11
Wireless LANs
Radio Resource Measurements Minutes

for the November 20002 Session

Date: November 12, 2002

Author: Harry Worstell
                                           Address
                                           Phone:
                                           Fax:
                                           e-Mail:

1. **November 12 2002 - 8:00am**
    1.1.   Call to Order
    1.2.   Attendance - 37
    1.3.   Agenda is 02/727
    1.4.   Update
        1.4.1.   PAR update
            1.4.1.1.   There are some issues in the SEC with the PAR
            1.4.1.2.   8 AM session Wednesday toe respond to SEC comments on PAR
    1.5.   Schedule
        1.5.1.   IP Rules
        1.5.2.   Draft Specification Document
        1.5.3.   Specification inputs
        1.5.4.   Break
        1.5.5.   Requirements and issues document
        1.5.6.   Outline of specification review
        1.5.7.   SEC - review comments
    1.6.   Papers for listed topics needed
    1.7.   Call for Papers
        1.7.1.   652r1 Example MIB Objects -   Mike Morton   15 min
        1.7.2.   676 MIB Variable Structure -   J Kim   1 Hr
        1.7.3.   677 Radio Measurement Action – Daryl Kaiser   1Hr
        1.7.4.
    1.8.   PAR Summery
        1.8.1.   Objection to wording in the beginning of scope - compliance with A, B,…..
    1.9.   Agenda approved unanimously
    1.10.   Paper By Mike Morten 02/652r1
        1.10.1.   Ideas for MIB structure
        1.10.2.   Listed MIB variables to be added to the dot11 MIB
        1.10.3.   Actions – polled STAs (TPC)
        1.10.4.   Would it make sense to set flags with queuing?
        1.10.5.   This was written for primarily for APs
            1.10.5.1.   IBSS may use these also
            1.10.5.2.   AP may act as a STA at the same time.
    1.11.   Paper by J Kim 02/676

1.11.1. Do the easy parts first
1.11.2. Passively Observed Parameters
    1.11.2.1. CCA, RSSI, Noise Power…
1.11.3. Transfer of Parameters between STA and Aps
1.11.4. Activity Measured Parameters
1.11.5. Control (Measurement process)
1.11.6. Step-by-step
    1.11.6.1. Define and add Passively Observable Parameters
    1.11.6.2. Transfer of parameters
    1.11.6.3. work on control issues
1.11.7. Distinguish AP and non-AP STA in MIB
1.11.8. Comments
    1.11.8.1. SNMP is no feasible for communicating here?
        1.11.8.1.1. Drivers not available in MAC
    1.11.8.2. Must Justify every counter – can't use too many
1.12. Paper by Daryl Kaiser 02/677r1
1.12.1. RM Actions – definition
    1.12.1.1. Parameters that require measurement actions
    1.12.1.2. Actions Not part of normal process
1.12.2. Listed RRM Goals
    1.12.2.1. Detecting rogue APs
    1.12.2.2. Quality WLAN radio topology
    1.12.2.3. Measure BSS overlap
    1.12.2.4. Quantify each stations local performance
    1.12.2.5. Detect non-802.11 interference and quantify noise
1.12.3. Suggests a request and report mechanism
    1.12.3.1. measurement that do not disrupt traffic
    1.12.3.2. measurements that does disrupt traffic
1.12.4. Actions
    1.12.4.1. Beacon Report (and Probe response)
    1.12.4.2. Extended CCA Report
        1.12.4.2.1. STA local performance
    1.12.4.3. Non-802.11 Receive Power Indicator (RPI) Histogram Report
        1.12.4.3.1. Measure background noise/signals
    1.12.4.4. Frame Report
        1.12.4.4.1. Identifies a stations local contending stations
    1.12.4.5. Suggests possible areas to place this information
        1.12.4.5.1. Define new table in STA management table
            1.12.4.5.1.1. Could be large – store in AP only?
1.12.5. Comments
    1.12.5.1. The 3 papers were very complementary
    1.12.5.2. Need absolute power measurements not now specified in the 802.11 standard now.
    1.12.5.3. Must be careful not to reduce the performance of stations
1.13. Video over IP requirements - Richard Paine
1.13.1. Covered the Boeing video architecture
    1.13.1.1. need to transition to video over IP environment from H.323/H.320
    1.13.1.2. 3 video streams on 802.11b
    1.13.1.3. How do you do video teleconferencing

        1.13.1.4.   How is it deployed and scaled between campuses
           1.13.1.4.1.   On campus – add bandwidth
        1.13.1.5.   Latency and obsolete coders and decoders
        1.13.1.6.   Phasing out H.323 in 3 years
        1.13.1.7.   Differences between voice and video is delay and packet sizes
  1.14.   BREAK
  1.15.   Requirements and Issues doc Review: doc 508r11
     1.15.1.   Review of Harry's Table
        1.15.1.1.   Opposing view to the table: Instead of What to measure, should be How? looks too artificial way to break down. What's measurable instead of what should be measured.
        1.15.1.2.   Confusing as to the distinction of AP and STA?
        1.15.1.3.   Useful in where measurements are made
        1.15.1.4.   Still stays unless alternative is offered
     1.15.2.   RSSI measurement may need PHY/MAC changes such as tighter tolerance. This conflicts with "NO MAC/PHY modification" requirement.
        1.15.2.1.   Minor Future changes should be acceptable by vendors
     1.15.3.   Review: RSSI is referred to the output of antenna, measured wherever deemed appropriate by vendors.
        1.15.3.1.   Suggest field strength measure by accounting for antenna gain.
     1.15.4.   RRM should be applicable for all bands 802.11 operates, presently and in future.
     1.15.5.   throughput measurement may be difficult to achieve in agreed manners
        1.15.5.1.   Link margin and backoff, etc information can be used to deduct throughput
        1.15.5.2.   Too early to discuss what to do about throughput, before TG approval
        1.15.5.3.   Probability of packet delivery can be used for throughput
        1.15.5.4.   Providing Basic info that can enable deducing throughput by other entities should be enough.
        1.15.5.5.   E.g., Do we have enough to give to 11e to deduce what they want?
        1.15.5.6.   Is the group interested in measurements used entirely in PHY and MAC and not exposed to the external world?
        1.15.5.7.   Do we have enough parameters to derive throughput by other entities?
           1.15.5.7.1.   Probably No..
        1.15.5.8.   Joint meeting with 11e after going TG may be a good idea to get inputs.
     1.15.6.   Requirement and issues is to be updated to reflect today's presentations and discussions.
     1.15.7.   The doc needs to be closed to finish the work in a reasonable time
        1.15.7.1.   Counter: The doc needs to remain open so that future ideas can bee included.
        1.15.7.2.   What and How to measure as well as justifications need to be put in to the doc?
  1.16.   Review of Template of the specification document
     1.16.1.   Table of Contents
  1.17.   No objections to Continuing discussions over Teleconferences
2. November 13
  2.1.   Call to Order
  2.2.   Call for Papers
     2.2.1.   None

2.3.   Attendance 54

2.4.   PAR Comments from SEC

    2.4.1.   "From the material in Item 12 and 18 and prune down the less than 5 lines called for in NESCOM. The text that is current in 12 is gobbledygook."

        2.4.1.1.   Response : Take off the supposed boilerplate, leaving "Radio Resource Measurement enhancements will provide mechanisms to higher layers for radio and network measurements.

           2.4.1.1.1.   Vote

               2.4.1.1.1.1.   yes 18 No 1 abs 4

2.4.2.   **Insert second comment and response 15 yes   0 No   6 ABS**

    2.4.3.   Requirements and Issues document

        2.4.3.1.   Document is only a guideline document as an input to the Task Group. The name may change and is not binding to the Task Group.

    2.4.4.   The group needs a Chair, Editor, and Secretary for the Task Group

        2.4.4.1.   Editor: Simon Barber Co-editor: Mike Morton

        2.4.4.2.   vote   yes 31 no 0 abs 4

        2.4.4.3.   Richard Paine chair

        2.4.4.4.   vote yes 39 no 0 abs 0

        2.4.4.5.   Harry Worstell Secretary

        2.4.4.6.   vote yes 40 no 0 abs 0

    2.4.5.   Motions for the Plenary

        2.4.5.1.   Motion: To hold weekly SG teleconferences starting December 4 2002 until the first RRM Task Group meeting.

           2.4.5.1.1.   Moved Richard Pain second Harry Worstell

           2.4.5.1.2.   Vote yes 40 no 0 abs 0

        2.4.5.2.   Motion: Extend the RRM SG until the first RRM task group meeting.

           2.4.5.2.1.   Moved Richard Pain second Harry Worstell

           2.4.5.2.2.   Vote yes 31 no 0 abs 7

        2.4.5.3.   Motion: To accept the PAR revision 337r10. The scope now is ~~This project will enhance the 802.11 Media Access Control standard, the 802.11a High Speed Physical Layer in the 5 GHZ band and the 802.11b Higher-Speed Physical Layer Extension in the 2.4 GHz band supplemental standards, other 802.11 PHY approved supplemental standards, and the 802.11d specification for operation in additional regulatory domains.~~ "This project will Radio Resource Measurement enhancements to provide mechanisms to higher layer for radio and network measurements Refer to Section 18~~6~~ for additional explanation.

           2.4.5.3.1.   Moved Richard Pain second Harry Worstell

           2.4.5.3.2.   vote   yes 36 no 0 abs 1

        2.4.5.4.   Motion: to authorize the Study Group Chair to present these motions to the Working Group.

           2.4.5.4.1.   Moved Peter E

           2.4.5.4.2.   Second Simon Barber

           2.4.5.4.3.   Vote yes 35 no 0 abs 0

        2.4.5.5.   Motion to adjourn

           2.4.5.5.1.   Moved Ivan Reede

           2.4.5.5.2.   Seconded   J Kim

           2.4.5.5.3.   Vote unanimous

IEEE P802.11
Wireless LANs

Minutes of High Throughput Study Group Meetings

Date: November 11,12,14, 2002

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Abstract

Minutes of the High Throughput Study Group meetings held during the IEEE 802.11/15 Plenary meeting in Kauai from Nov. 11 through 15, 2002.

Executive Summary:

1. The November 2002 meeting focused on developing the PAR and 5 Criteria:
   a. PAR Purpose was agreed upon with >75% approval
   b. 4 of the 5 Criteria were agreed upon with > 75% approval
2. A list of technical contributions relating to throughput enhancing technology and requirements presented in the WNG which spawned this study group were captured as:

High-throughput technologies
IEEE 802.11-02/180r0   On the use of multiple antennas for 802.11
IEEE 802.11-02/232r0   Extended data rate 802.11a
IEEE 802.11-02/294r1   HDR 802.11a solution using MIMO-OFDM
IEEE 802.11-02/320r0   ¼ Giga-bit/s WLAN
IEEE 802.11-02/514r0   Benefits of smart antennas in 802.11 networks
IEEE 802.11-02/708r0   MIMO-OFDM for high throughput WLAN: experimental results

Discussion of HT requirements and compatibility

IEEE 802.11-02/182r0	Home networking requirements & aspects for next generation WLAN
IEEE 802.11-02/252r0	Suggested criteria for high throughput extensions to IEEE 802.11 systems
IEEE 802.11-02/308r0	Next generation wireless LANs
IEEE 802.11-02/312r0	Towards IEEE 802.11 HDR in the enterprise

3. Document IEEE802.11-02/729ar1-HT-Proposal-PAR-Title-Scope-Purpose.doc tracks the PAR and 5 Criteria as they are being agreed to.
4. Good progress was made and it is probable that the PAR and 5Criteria will be completed at the January meeting.

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Total – 129 inclusive of all meetings

Monday Nov 11, 7:00-9:30 PM
:
1. Meeting was called to order by Jon at 7:05 PM
2. Jon Rosdahl strawman (doc. 11-02- 666r0) agenda for the week was:
    Meeting Call to Order
    Review IEEE/802 & 802.11 POLICIES and RULES
    Approve/Modify Agenda
    Approve minutes of last meeting
    Discuss/Revise PAR and 5 Criteria
    Recess
3. Motion to approve Agenda by Adrian Stephens, seconded by Mathew Shoemake passed w/o comment

4. Motion to approve minutes of last meeting by Kevin Smart, seconded by Colin Lanzl passed w/o comment
5. Objectives
    a. finalize wording of PAR
    b. develop response to 5 Criteria
6. Presentation doc. 654ar0 - Adrian Stephens, Intel
    a. Proposed to accept submission 02/654r0 as draft PAR and 5Criteria
    b. Issues
        i. Coexistence and Compatibility
        ii. Need market segment input to understand how upgrades are made in practice
        iii. Technical info needed to resolve "xxx" in purpose statement – let's do it right now
    c. Reviewed structure of proposed PAR document
        i. Scope – as in Monterey but with xxx defined based on market and technical studies
        ii. Purpose – unchanged
        iii. Other projects - .15SG3a
        iv. Dates – Sept 2004
        v. Ratified - 2005
    d. 5 Criteria
        i. Made proposals for each of the 5 criteria
    e. Comments
        i. What is process for gathering marketing input? A- industry data by usage models from individual companies
        ii. Given Adrian's process how would company bias be filtered out of marketing numbers?; A – the SG would
        iii. Is a set of marketing requirements necessary? A – yes
        iv. Did Adrian's schedule comprehend acquiring this marketing info? A – yes in the long run
        v. Should we hire a market research company? A – no, this is a volunteer organization
        vi. Are you going to motion this? A – yes but when it is in order.
        vii. If PAR and 5 Criteria are too detailed, won't we be too constrained? A – yes it is possible but we must at least get the compatibility issue right.
        viii. What is your personal opinion on backward compatibility? A – we need to answer the question
7. Presentation doc. 675r0 - Motohiro Gochi, Speednet
    a. Market for Internet Access in Japan
    b. Broadband access is small
    c. E-Japan Strategy is initiative by Japanese Government
    d. Service Coverage
    e. Apartment Ratio – almost 70% in Tokyo
    f. Issues in Apartment – don't have BB access to each apt.
    g. Solution - need high throughput wireless

      h.   Suggested new Purpose statement for motion:

To improve the 802.11 wireless LAN user experience by providing significantly higher throughput for applications over a wireless LAN in the Home, Last mile, Hot-spot and Enterprise Markets.

      i.   Comments
- i. Density: users per AP? A – 30-50 users per hot spot
- ii. How many APs per utility pole? A – 2
- iii. How does this differ from 802.16; A – last mile solution
- iv. Will apts have directional antennas? A – yes
- v. What about multipath? A – yes it was considered; that is why directional antennas will be used

8. Presentation doc. 661r0 – Ziv Belsky, Wavion
   a. Addresses 5 Criteria
   b. Why do it? A – High Throughput
   c. Requirements
      - i. Interoperable with .11a to differentiate from .15.3 or .15.3a
      - ii. Compare results at the same range
      - iii. Scalability in cost and performance
      - iv. Improve throughput for all users including the existing users
      - v. Evolution can accomplish the objective; don't have to be revolutionary
   d. 5 Criteria
      - i. Broad Market Potential
        1. Multiple applications
        2. Multiple Vendors/users
        3. Balanced costs
      - ii. Compatibility
        1. with .11 not .15
      - iii. Distinct Identity
        1. WLAN not a WPAN
      - iv. Technical Feasibility
        1. MAC and PHY demonstrated already
      - v. Economic Feasibility
        1. known factors
        2. balance costs
        3. remember installation costs
   e. Comments
      - i. What number is a feasible number? A – 10x

      ii. How do we justify cost increases wrt performance levels? A – different chip sets for different performance levels would be an example

     iii. Backward compatibility to .11a only? A – no

9. Presentation doc. 682r0 – Pratik Mehta, Dell

  a. Next Gen Wireless LAN Standard outline

      i. Market progression

     ii. Backwards Compatibility

    iii. Features

    iv. Conclusion

  b. Progression

      i. Market cycle for WLAN – ramp after standard =2/3 years

     ii. Ethernet progression history reviewed

  c. Backwards Compatibility (BC)

      i. ESSENTIAL

     ii. Precedents = .11g, dual band

    iii. Recommendation - **BC does not have to be done in the standard, it can be accomplished at the product level like a+b dual band solutions**

  d. Features List Suggested

      i. HT – 100 Mbps

     ii. Longer Range

    iii. Lower Latency and Jitter

    iv. Efficient Spectrum Usage

     v. Exploit learning's in other wireless industries

    vi. Coexistence

   vii. Management and Security

  viii. IP everywhere is the way to go

    ix. Wi-Fi Certified

  e. Summary

      i. No rush

     ii. BC is must but can be done in many different ways

    iii. Get the features right up front

    iv. Minimum goals up front; let's do PAR and 5C right up front

  f. Comments

      i. Can BC be ignored in the standards body? A – no but don't let it constrain solutions

     ii. At what layer are we considering BC? A – depends on scope

    iii. Is MIMO too far in future? A – don't know

      iv. Why spectrum Efficiency? A – don't want to get more throughput by consuming large amounts of spectrum

      v. Is new frequency band a possibility? A – yes

10. Jon Rosdahl - Comments on PARs from executives
    a. NESCOM wants <= 5 lines for scope
    b. Scope not = Purpose
    c. Incompatibility must be clear in 5 Criteria response
11. Motion #1 by Adrian Stephens – Move that this group adopt 11-02/654r0 as its draft PAR and 5Criteria response; seconded by Boyd Bangerter
    a. Discussion
        i. 75% required to pass? A- yes
        ii. Each change will also require a 75% approval level
12. Motion #1 fails (17,34,24)
13. Motion #2 by Adrian Stephens – Move that: this group solicit Marketing Information submissions containing usage scenarios/market segments size for 802.11 high throughput; the group determine the requirements for compatibility/coexistence based on this information and add these requirements into its draft PAR & 5C; the PAR and 5C will not be submitted to ballot until these requirements are added; seconded by Boyd Bangerter
14. Motion to divide by Jim Zyren and seconded by Colin Lanzl
15. Motion to divide fails (31,26,13) since 75% required
16. Return to main motion #2
    a. Discussion
        i. Need to know the direction we want
        ii. Gives clarity
        iii. Will accelerate and not delay the standardization process
        iv. How much time would these studies take? A – by next meeting
        v. Market studies will not be valid over an adequate horizon
        vi. No new info but would delay the process
        vii. Will not delay because we have the info and it is best to do it up front
        viii. Just look at compatibility if nothing else
        ix. Need to get specific about things which don't have precedents
        x. When does SG charter expire? A – through March 2003
        xi. Learn from .11a and .11g experience; get it right up front
        xii. Technology push versus market pull needs to be understood
    b. Orders of the day
17. Meeting recessed until tomorrow at 8 AM

Tuesday November 12; 8-10 AM

1. Meeting was called to order at 8:00AM
2. Discussion continued
   a. Will the progress of study group would be totally dependent on this motion if passed?
   b. We must get this right as coexistence is the single most important item
   c. Marketing input at this time is highly subjective
   d. Will save time not cost time in the long run
3. Adrian's Motion #2 fails (17, 36, 19)
4. Motion #3 by Adrian Stephens to - Move (02/654r4) that this group solicit technical submissions indicating that the data throughput rates should be feasible along with an architectural (high level) description of the technology to achieve it; the group determine a suitable performance requirement for its PAR and 5C that is shown to be technically feasible; the PAR and 5C will not be submitted to ballot until this requirement is added - was seconded by Eric Jacobson
5. Discussion
   a. Trying to answer "what is xxx factor?' with confidence
   b. Purpose of SG is? A – SG's purpose is to determine if sufficient interest in a project and not to make technical decisions
   c. Would this motion not preclude finishing the PAR and 5C until a technical solution has been submitted?
   d. Technical presentations should be made at the TG level
6. Adrian's Motion #3 fails (18, 34, 18)
7. Motion to improve the 802.11 LAN user experience by providing significantly higher throughput for applications over wireless LANs in Home, Hot Spot and Enterprise Markets moved by Motohiro Gochi and seconded by Boyd Bangerter
8. Discussion
   a. What is meant by 'significantly' here?
9. Motohiro's Motion fails (7, 37,27)
10. Motion #1 (661r2) by Ziv Belsky to approve the following as a response to the first criteria – Broad Market Potential: seconded by Bruce Kraemer

This project will extend the throughput provided by 802.11, thereby enabling new applications that require these rates. Products based on 802.11a and 802.11b have proved to be very popular; 802.11g products will become popular during the projected lifetime of this project. This project continues the evolution of 802.11 to address the growing demand for throughput.

Demand for WLANs is expected to grow at a 50% *Compounded Annual Growth Rate* (CAGR) over the next five years. Over 50% of all home networking connections and over 40% of all mobile PC network connections will be over WLAN by 2005. New usages such as simultaneous transmission of multiple HDTV signals, audio, on-line gaming, etc. will drive the need for higher throughput in the home. As usage increases in the corporate and other high density environments, bandwidth restrictions of a shared media will begin to be realized. This is very similar to what happened in the wired Ethernet market. The need for higher throughput drove switching and

100Base-TX adoption. While a switching technology would ultimately be desired for WLAN, this is not technically feasible.   The next logical step is to increase the data throughput of each WLAN Connection.

This throughput increase must be enough to accommodate user needs for the next 5 years.

11. Discussion
    a. Is "next 5 years" too small?
12. Adrian Stephens moved to amend 5 years to 7 years but not seconded
13. Gunter Kleindl moved to amend the motion to spell out CAGR as Compounded Annual Growth Rate
14. Motion to amend passes (52, 1, 15)
15. Discussion
    a. When does '5 years' start?
    b. '5 years' was nominal but generally from today
    c. Source of 40% and 50%
    d. 40% personal; 50% market research
16. Motion to amend by Sean Coffey to add "as measured at the MAC data SAP interface" was seconded by Mickey Mehta
17. Motion to amend fails (25, 16, 30) since not 75%
18. Main motion #1 as amended passes (36, 1, 23) [amendment shown in italics in the original motion above]
19. Motion #2 (661r2) by Ziv Belsky to approve the text below as a response to the second criteria – Compatibility - was not seconded. The text in bold was the proposed change to the existing text.

This project will result in an evolution of the existing 802.11 standards providing **co-existence and compatibility with 802.11a and 802.11g**. It will introduce no 802.1 architectural changes – i.e. the MAC data SAP definition will not be altered. New managed objects will be defined as necessary in a format and structure consistent with existing 802.11 managed objects.

20. Motion #3 (661r2) by Ziv Belsky to approve the following text as a response to the third criteria – Distinct Identify: seconded by Adrian Stephens

This project will result in a wireless LAN with higher throughput than provided by 802.11a, 802.11b and 802.11g. *The goal is to increase overall system throughput by considering both PHY and MAC layer enhancements.*

IEEE P802.15 study group SG3*a* will support higher-rates than those currently defined by P802.15 task group 3, and similar to those targeted by this proposal.   However, the applications of 802.11 and 802.15 are different. 802.15 defines standards for *wireless* personal area networks, 802.11 defines standards for wireless local area networks.   The different requirements of each group may result in different standards that satisfy the purpose and scope defined in each project's PAR.

21. Motion to amend by Sean Coffey to add "and 802.11e" in alphabetical order was seconded by Mathew Shoemake
22. Discussion
    a. If we are going to state 5x we should reference that to a specific standard
    b. 5 Criteria is important to SEC and used when the SEC rules on approving a PAR per Jim Carlo
23. Motion by Neils van Erven to amend amendment to add "802.11h" in alphabetical order seconded by Pratik Mehta
24. Motion passes (31,9,26)
25. Discussion
    a. Add lower latency and lower jitter to this motion
26. Motion to amend amended motion by Simon Chung to replace the enumerated amendments 802.11a, 802.11b and 802.11g by "802.11 and its amendments" seconded by Slobodan Nedic
27. Motion passes (62,2,22)
28. Discussion
    a. Are we focussing correctly on the 3rd Criteria? A – not clear
29. Motion to amend main motion using the amended amendment fails (14, 13, 38)
30. Discussion
    a. Does this address 3a only?
    b. Mainly 3a but also 3b and 3c
31. Motion to amend to add wireless before personal by Ivan Reed and seconded by Gunter Kleindl passed unanimously
32. Discussion
    a. Too Phy centric?
    b. Need to emphasize MAC and PHY
33. Motion to amend by Sean Coffey to add "The goal is to increase overall system throughput by considering both Phy and MAC layer enhancements" seconded by Weishi Feng
34. Motion to amend passes (60,2,8)
35. Motion to amend by Bruce Kraemer to change third criteria to criterion 3a seconded by Colin Lanzl passed unanimously
36. Vote on main motion #3 passed as amended (76,1,4) [amendments shown in italics in original motion above]
37. Motion #4 to approve the following as the response to the fourth criteria on Technical Feasibility by Ziv Belsky and seconded by Adrian Stephens:

The project is technically feasible because proprietary extensions of 802.11 supporting higher throughput have been *reportedly* demonstrated in the laboratory. Simulations are available that demonstrate the feasibility and performance of new *MAC* and PHY layer techniques that result in significant throughput improvement. *MAC layer changes are at least necessary to manage the new PHY layer, and may be able to provide additional performance gains.*

List of reports

Legend: italics indicates added text, underlined text represents text removed

38. Motion to amend by Colin Lanzl to add "MAC and" and remove the last sentence seconded by Tim Wakeley
39. Motion to amend passes (78,1,5)
40. Discussion
    a. Have majority seen this in the labs?
41. Motion to amend by Ivan Reed to add "reportedly" and add references to who made the reports was seconded by Colin Lanzl
42. Discussion
    a. Simulation will also fall in the same category as "demonstrations"
43. Call for orders of the day
44. Meeting was recessed until 7:00 PM Thursday

Thursday November 14; 7-9:30 PM

1. Jon called the meeting to order at 7:05 PM
2. Motion to amend by Ivan Reed passes (20,5,13)
3. Comments
    a. Is the list of references needed before we send the PAR and 5C to the SEC
4. Motion to amend by Adrian and seconded by Colin Lanzl to remove the first sentence passed unanimously
5. Motion to amend to strike the 'list of reports' was made by Boyd Bangerter and seconded by Chris Hansen passes (27,3,11)
6. Comments
    a. Should we add a list of presentations that were made in the WNG that contributed to the formation of this study group? A- no but there is a motion coming to include them in the minutes of this meeting.
7. Belsky Main motion #4 passes (27,0,11) and, with amendments shown in italics, is:

Simulations are available that demonstrate the feasibility and performance of new *MAC* and PHY layer techniques that result in significant throughput improvement.

8. Ziv Belsky made motion #5 below as a response to the fifth criterion (Adrian's original text) seconded by Adrian Stephens: Support of the proposed standard will probably *may* require a manufacturer to develop *the development of* a modified radio and modem *modified MAC and/or PHY implementations*. This is similar in principal to the transition between 802.11b and 802.11g. The new standard will provide manufactures the option of supporting higher throughput. Competition between manufacturers will ensure that cost are reasonable.
9. Motion to amend to change "will probably" to the word "may" made by Ali Sadri and seconded by Slobodan passed unanimously.

10. Motion to amend to change 'modified radio and modem' to 'modified PHY and/or MAC implementations' made by Micky and seconded by Simon passed unanimously
11. Motion to amend amendment to remove /or by Adrian and seconded by Chris Jacobson passed (30,4,5)
12. Motion to amend main motion to remove 'the manufacture of a' to 'the development of' made by Walter and seconded by Veronica passed unanimously
13. Motion to amend to change criteria to criterion was made by Boyd Bangerter and seconded by Ziv passed unanimously.
14. Motion to amend by removing second sentence by Micky and seconded by Malik
15. Comments:
    a. Need to keep this concept of a transition
    b. .11g did in fact require changes to the MAC
    c. Did .11g PAR and 5C included costs?
    d. Doc 00/11r3, .11g 5C did address costs
16. Motion to amend fails (25,12,10)
17. Belsky main motion #5 passes (37,3,7) and, with amendments shown in italics, is:

Support of the proposed standard *may* require *the development of modified MAC and PHY implementations*. This is similar in principal to the transition between 802.11b and 802.11g. The new standard will provide manufactures the option of supporting higher throughput. Competition between manufacturers will ensure that costs are reasonable.

18. Motion by Ziv Belsky to approve the following as a response to Criteria 3b – one unique solution to a problem – seconded by Antonio Salloum:
There will be one wireless standard providing significantly higher throughput than either 802.11a or 802.11g.
19. Friendly amendment – add within 802.11 after standard – made by Micky Mehta and seconded by Colin Lanzl
20. Motion to amend amendment to replace 802.11 with IEEE 802 by Adrian Stephens and seconded by David Johnson.
21. Discussion
    a. More than one wireless LAN standard within 802?
22. Motion to amend the amendment fails (17,17,14)
23. Discussion
    a. Against -Speaks to ownership
    b. For – no control over other standards within this geography
24. Motion to amend fails (29,14,12) as 75% approval needed
25. Main motion discussion:
    a. Out of order because it constrains the WG
    b. Reviewed Criteria 3b; chair ruled not out of order
26. Motion to amend by Carl Temme to replace main motion with "There are currently no other standards addressing higher throughput systems that are backwards compatible and interoperable with 802.11 a and 802.11g"

27. Discussion:
    a. Against – too broad but likes word currently
    b. Postpone until we address compatibility
28. Motion to table motion to amend is non debatable and fails (20,21,10)
29. Motion to amend amendment to "There are no other wireless LAN standards providing significantly higher throughput than either 802.11a or 802.11g." passes unanimously.
30. Discussion of amended motion:
31. Main motion #6 (C3b) as amended passed (56,3,2) and is:

There are no other wireless LAN standards providing significantly higher throughput than either 802.11a or 802.11g.

32. Motion #8 to have the document list below entered into the minutes as a reference for members of the WNG SC (doc. 02/661r3) by Ziv Belsky and seconded by Colin Lanzl passed unanimously

High-throughput technologies
IEEE 802.11-02/180r0	On the use of multiple antennas for 802.11
IEEE 802.11-02/232r0	Extended data rate 802.11a
IEEE 802.11-02/294r1	HDR 802.11a solution using MIMO-OFDM
IEEE 802.11-02/320r0	¼ Giga-bit/s WLAN
IEEE 802.11-02/514r0	Benefits of smart antennas in 802.11 networks
IEEE 802.11-02/708r0	MIMO-OFDM for high throughput WLAN: experimental results

Discussion of HT requirements and compatibility
IEEE 802.11-02/182r0	Home networking requirements & aspects for next generation WLAN
IEEE 802.11-02/252r0	Suggested criteria for high throughput extensions to IEEE 802.11 systems
IEEE 802.11-02/308r0	Next generation wireless LANs
IEEE 802.11-02/312r0	Towards IEEE 802.11 HDR in the enterprise

33. Ziv Belsky moved (Motion #7) to approve the following response to criteria 3C as "The high throughput standard will be introduced as a*n separate* amendment to the 802.11 specification"
34. Motion to amend by John Griesing and seconded by Slobodan Nedic to remove 'separate' passes unanimously
35. Belsky main motion #7 passed (46,1,8) and is

The high throughput standard will be introduced as a*n* amendment to the 802.11 specification.

36. Presentation (02/729ar0) by Colin Lanzl on Scope, Purpose, and Title

a. Title – **Enhancements for Higher Effective Throughput** plus boiler plate
   i. Motion to ratify title as above made by Colin Lanzl and seconded by Micky Mehta
   ii. Discussion
      1. MAC and PHY
      2. Higher is fine
   iii. Title adopted by unanimous consent
   iv. Motion to ratify the following **purpose** for the PAR made by Colin Lanzl and seconded by David Johnson
      1. **To improve the 802.11 wireless LAN user experience by providing significantly higher throughput for current applications and to enable new applications and market segments**
      2. Passed unanimously
   v. Motion to select the **scope** for the PAR from the following choices was made by Colin Lanzl and seconded by Ziv Belsky:
      1. To define standardized modifications to the 802.11 MAC and PHY layers that achieve a minimum increase (XX) in throughput as measured at the MAC data SAP
      2. To define standardized modifications to the 802.11 MAC and PHY layers that provide modes compatible with existing 802.11 systems and that are capable of extensions to much higher throughputs (for example, 100-200 Mbps) at the MAC data SAP
      3. Proposed addition to option 2 - In addition, proposed solutions will be evaluated on the effect of these extensions on other elements impacting user experience, including but not limited to range, latency and jitter.
      4. Straw Poll on preferences
         a. Original Scope (14)
         b. New Proposed Scope (19)
         c. New Proposed Scope but Modified (44)
   vi. Colin will maintain doc 02/729ar0 that captures the PAR and 5C discussions
37. Presentation (doc 02/748r1) by Tim Wakeley
   a. Enterprise customer requirements
   b. Translate into minimum PAR requirements
      i. Motion for a format for section 18 made by Tim Wakeley (doc 02/748) and seconded by Caldwell Crosswy:

      To define standardized modifications to the .11 MAC and PHY layers that achieve the following minimum requirements:
         - a throughput of [TBD] Mb/s as measured at the MAC data SAP
         - at range of [TBD] m in an office environment
         - with roaming method: [TBD]
      ii. Discussion:

1. Good clarification
2. There are other requirements
3. Meaning of roaming method? A - Make before break
4. Too detailed, remember we have to measure these!

   iii.   Motion fails (13,34,21)

38. Jon has had the charter for the Study Group extended through the end of March
39. Should we have teleconferences between now and January meeting
    a. One teleconference (14)
    b. No teleconference (12)
    c. More than one teleconference (0)
40. Should we generate a call for technical presentations for the January meeting straw poll failed (25,9,15)
41. The next meeting will begin by continuing the discussion of the scope statement as proposed in doc. 02/729ar0.
42. Meeting adjourned at 9:28PM