

**IEEE P802.11
Wireless LANs**

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

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Abstract

Cumulative minutes of the High Throughput Task Group meetings held during the IEEE 802.11 Interim session in Hawaii from January 16 through 20, 2006. The session was chaired by TGn chair Bruce Kraemer from Conexant.

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Executive Summary (also see Chairs' meeting doc 11-05-1249r5 and closing report doc. 11-06-0222r0):

1. TGN Joint Proposal team presented their complete proposal to the IEEE 802.11TGN body as contained in documents:
 - 11-05-1095r5 [MAC]
 - 11-05-1102r4 [PHY]
2. The JP proposal overview was presented to the body in documents:
 - 11-06-0045r0 - Overview
 - 11-05-1161r2 – Phy Details
 - 11-05-1165r5 – MAC Details
3. Ample time was made available for Q&A
4. Confirmation vote on adopting the JP as the TGN baseline document was held and the body approved it unanimously (184,0,4)
5. A Technical Editor Election was held and Adrian Stephens from Intel was elected by acclamation.
6. An ad hoc committee was formed to develop a PICS and MIB in time for the March meeting; Adrian Stephens volunteered to chair this committee; first conference call set for Feb 20 at 11 AM EST
7. An ad hoc committee was formed to develop a Coexistence Assurance document; Sheung Li volunteered to chair this committee; first conference call set for Feb 20 at 4 PM EST
8. Plans for March meeting were discussed and included:
 - Presentation of draft & discussion
 - Presentation of CA; discussion; joint meeting with .19; vote?
 - Presentation of MIB & PICS; discussion; vote to incorporate in draft?
 - Review timeline
 - Set logistics for TGN peer review of draft before going to first LB

Note: Relative to presentations, these minutes are intended to offer a brief summary (including document number) of each of the presentations to facilitate review and recall without having to read each of the presentations. Most of the 'presentation related' minutes are built directly from selected slides and therefore are not subjective. An effort was made to note obscure acronyms. As always Q&A is somewhat subjective/interpretive on my part and therefore subject to question.

Detailed cumulative minutes follow:

Monday; January 16, 2006; 10:30 AM – 3:30 PM [~ 175 attendees; 9 new]

1. Meeting was called to order by Task Group chair at 10:30PM
2. Chairs' Meeting Doc 11-05-1249rx

3. Chair read IEEE-SA Standards Board Bylaws on Patent Policy and additional Pat Com Guidance; chair noted change to 2006 version!
4. Chair reviewed topics NOT to be discussed during the meeting including – licensing, pricing, litigation, market share
5. Letters of Assurance (LOA) can be sent to Pat Com but details should not be discussed here
6. Attendance reminder – for this meeting attendance will be manual (IEEE registration desk) and on an honour system
7. Now is the time to confirm your voting status especially in view of the likely confirmation vote later this week – see Harry if you are unsure
8. Reminders:
 - 8.1. Make sure your badges are visible especially when voting
 - 8.2. No company logos on presentations
9. Chair reviewed history of .11n in order to provide the background to set the agenda for this meeting:
 - 9.1. HTSG formed in 9-11-02
 - 9.2. TGn formed 9-15-03
 - 9.3. Mar 05 1st confirm vote which failed
 - 9.4. July 05 formed JP
 - 9.5. Jan 06 JP proposal made to .11n
 - 9.6. Goal remains a ratified standard in April 2007
10. Nov proposal for January's Agenda reviewed and noted that it was based on JP proposal put on server by Jan 9, 2006
11. Exec Summary from Nov minutes 11-05-1148r0 presented
- 12. Motion by Amer Hassan to approve Nov minutes, 11-05-1148r0, was seconded by Jon Rosdahl and approved unanimously**
13. Chair listed doc numbers posted by JP prior to this meeting as:
 - 13.1. 11-05-1095-04-000n Joint Proposal MAC Specification
 - 13.2. 11-05-1102-04-000n Joint Proposal PHY Specification
 - 13.3. 11-05-1268-01-000n TGn Joint Proposal MAC1 Results
 - 13.4. 11-05-1267-01-000n TGn Joint Proposal MAC Simulation Methodology
 - 13.5. 11-05-1266-01-000n TGn Joint Proposal MAC Results
14. Chair listed doc numbers of JP supporting documents
 - 14.1. 11-05-1269-00-000n TGn Joint Proposal MAC2 Results
 - 14.2. 11-05-1270-00-000n TGn Joint Proposal MAC3 Results
 - 14.3. 11-06-0046-00-000n TGn Joint Proposal FRCC Compliance
 - 14.4. 11-06-0067-00-000n TGn Joint Proposal PHY Results
 - 14.5. 11-06-0045-00-000n Joint Proposal Opening Report
15. Changes to Chair's list?
 - 15.1. 11-05-0067r0 to r1
 - 15.2. add new doc from Institute for Infocom Research, 11-06-0084r0
 - 15.3. add 11-05-1165r5, Joint Proposal MAC Detail which will be posted before lunch
16. Chair proposed an agenda for this meeting (granted 16 hours total) which was modified; the modified agenda is shown in the following table which is followed by a description of how the acceptance of the modifications were achieved:

Jan 16

Jan 17

Jan 18

Jan 19

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00-10:00	⊘	⊘	⊘	First Confirmation vote at 9:00 AM	
10:30-12:30	Opening JP Overview	⊘	⊘	Comment Resolution	
13:30-15:30	PHY Rationale and Q & A	⊘	⊘	Second Confirmation vote	
16:00-18:00	⊘	MAC Rationale and Q&A	⊘	Technical editor Coexistence Plans for March	
19:30-21:30	⊘	Q & A	⊘	⊘	

17. Agenda overview

17.1. Monday – AM2 admin and JP presentation, PM1 Q&A

17.2. Tuesday 4 hours for Q&A

17.3. Wednesday – no time allocated

17.4. Thursday – AM1 Q&A, AM2 confirmation vote special order, PM1 Technical editor election (Sean Coffey has withdrawn his candidacy leaving only Adrian Stephens but nominations are still open), PM2 plans for Mar

18. Recommended change – Monday PM1 devoted to PHY presentation and MAC presentation Tuesday PM2 and evening was accepted

19. Other presentations? A – none

20. Other agenda items? A – none

21. Suggested 9 AM confirmation vote as special order on Thursday with a 2nd confirm vote if needed for Thursday PM1 was accepted

22. Confirmation vote procedure alternatives

22.1. Show of hands

22.2. Verbal but recorded

22.3. Paper process

23. Discussion – our process calls for a roll call vote

24. OK - verbal or paper?

25. No objection to a verbal roll call vote

26. Note that the agenda can be changed with 2/3 majority; e.g., not use 2nd roll call vote

27. Need to change dates on columns of agenda from 9-12 to 16-20
28. **Motion to approve agenda on slide 22 with amendments by John Barr and seconded by Jim Petranovich was accepted without objection**
29. Presentation "JP Opening Report" 11-06-0045r0 Introduction by Jon Rosdahl
 - 29.1. **JP has completed and is READY**
 - 29.2. 300 meeting hours by JP since July
 - 29.3. JP team is united in its support of this proposal
30. Phy summary by Aon Mujtaba
 - 30.1. High Level changes since Nov
 - 30.1.1. Mandatory ~150 Mbps -> ~600 Mbps with Optional features (slide 17)
 - 30.1.2. Number of encoders: 1 below 300 Mbps and 2 above (added 5/6 coding)
 - 30.1.3. Parser – Group wise
 - 30.1.4. Antenna mapper – TX Beam Forming (BF) option
 - 30.1.5. GI – 400 ns optional
 - 30.1.6. Short MIMO preamble – Green Field optional
 - 30.1.7. HT-SIG modulation – 2 symbol 90 degree rotated Q-BPSK
 - 30.1.8. Scrambler initialization – Service Field in MAC Header
 - 30.1.9. MCS set – asymmetric MCS sets (for STBC and TxBF)
 - 30.1.10. Advanced Coding - LDPC
 - 30.1.11. Sounding packet Format – staggered preamble & zero-length Frame (both optional)
 - 30.1.12. STBC – 3x1 and 4x1 added as optional
31. MAC summary by Adrian Stephens
 - 31.1. High Level Changes since Nov
 - 31.1.1. Added new features
 - 31.1.1.1. PCO 20/40 MHz operation
 - 31.1.1.2. Greenfield & RIFS operation
 - 31.1.1.3. MIMO power saving
 - 31.1.2. A-MPDU – about 2.5 x Data/ACK (aggregation at bottom of MAC)
 - 31.1.3. A-MSDU - ~20% on top of A-MPDU (aggregation at top of MAC)
 - 31.1.4. Reverse Direction - ~25% benefit
 - 31.1.5. Enhanced Block ACK - ~5-10% benefit
 - 31.1.6. PSMP/MTBA – VoIP call density increase of up to 2x non-PSMP (power save multi-poll)
32. Final Thoughts by Jon Rosdahl
 - 32.1. complete
 - 32.2. Recommend body approve 11-05-1095r4 and 11-05-1102r4 as baseline in confirmation vote
33. Bruce presented changed agenda (see above) and noted we have 45 min remaining this AM; how to use this time?
34. Phy team preferred to wait until PM1 session at 1:30 PM before starting PHY details
35. Questions/Comments on Opening presentations
 - 35.1. really a home coming week for .11n
 - 35.2. proposal looks very good
36. Session was recessed at 11:45 AM until 1:30 PM today
37. Session was reconvened at 1:32 PM by the Chair

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