

Tentative Minutes of the IEEE P802.11 Working Group

**Plenary meeting
Baltimore, MD
March 8-12, 1993**

Monday, March 8, 1993, PM

The meeting was called to order at 3:45 PM Vic Hayes, chairman IEEE P802.11¹⁾, in the chair. Carolyn Heide secretary. John McKown managing document originals and copying, Leon Scaldeferri distribution and pigeon hole organization, and Ning Kong handling the attendance list. The agenda document for this meeting is 802.11-93/18 sent out in the February mailing.

Objectives:

- continue on time-bounded services, Infrastructure services and Network Management functionality.
- continue on MAC/PHY interface.
- outline for MAC proposals
- accept input from DS IR ad hocs.

1) The officers of the Working Group are:

Mr. VICTOR HAYES
Chairman IEEE P802.11
NCR Systems Engineering B.V
Architecture & Systems Mngmnt
Zadelstede 1-10
3431 JZ Nieuwegein, NL
E-Mail: Vic.Hayes@Utrecht.ncr.com
Phone: +31 3402 76528
Fax: +31 3402 39125

Mr. JOHN McKOWN
Vice Chairman IEEE P802.11
Motorola

3209 N. Wilke Rd
Arlington Heights, IL 60004, USA
E-Mail: mckown@whitefish.rtsg.mot.com
Phone: +1 708 632 6551
Fax: +1 708 632 3462

Ms CAROLYN L. HEIDE
Secretary IEEE P802.11
Spectrix Corporation

906 University Plaza
Evanston, IL 60201-3121, USA
E-Mail: 71041.3262@compuserve.com
Phone: +1 708 491 4543
Fax: +1 708 467 1094

Mr. DAVE BAGBY
Chair IEEE P802.11-MAC
Sun Microsystems
2550 Garcia Av MS MTV 14-203
Mountain View, CA 94043, USA
E-Mail: david.bagby@sun.com
Phone: +1 415 336 1631
Fax: +1 415 336 4802

Mr. LARRY VAN DER Jagt
Chair IEEE P802.11-PHY
Knowledge Implementations Inc.
32 Conklin Rd
Warwick, NY 10990, USA
E-Mail: kiilvdj@attmail.com.com
Phone: +1 914 986 3492
Fax: +1 914 986 6441

Mr. ROBERT ACHATZ
Editor IEEE P802.11
US Department of Commerce
NTIA/ITS
325 Broadway
Boulder CO 80303, USA
Phone: +1 303 497 3680
Fax: +1 303 497 3498

Mr. CHANDOS RYPINSKI
Editor IEEE P802.11
LACE Inc.
921 Transport Way
Petaluma CA 94952, USA
E-Mail: rypinski@netcom.com
Phone: 707 765 9627
Fax: 707 762 5328

Mr. NATHAN SILBERMAN
Editor IEEE P802.11
California Microwave Inc
985 Almanor Avenue
Sunnyvale CA 94085, USA
E-Mail: nsilberman@mcimail.com
Phone: +1 408 720 6462
Fax: +1 408 720 6312

Mr. FRANÇOIS Y. SIMON
Editor IEEE P802.11
IBM
P.O. Box 12195 MS E87/B673
ResearchTrianglePark NC 27709, USA
E-Mail: fygs@ralvmg.vnet.ibm.com
Phone: +1 919 254 4584
Fax: +1 919 254 5410

- continue work on FH PHY channel model.
- prepare liaison from other 802 groups.

1. Opening

- 1.1 Roll Call: People in the room were invited to mention their name and affiliation.
- 1.2 Voting rights: Voting tokens were distributed in the attendance book to be picked up by voting members during attendance list circulation. There is a paper describing voting rights and information for new members, IEEE 802.11-92/00, 00.1 and 00.2. In subgroups everyone can vote.
- 1.3 Attendance list, Registration: The attendance list was distributed - 75% attendance according to the attendance list is required to qualify for attending a meeting, so make sure to sign the book. Copies of the attendance list are handed out before the end of each meeting.
- 1.4 Logistics: Document distribution is done using pigeon holes - you will find your copies and messages in the referenced location in the expanding file folders. Breaks are normally 20 minutes at 10 AM and 2:45 PM, lunch from 12 noon to 1:00.
- 1.5 Other announcements: award presentation to the secretary, Carolyn Heide, Spectrix, in thanks for producing the minutes within a week of the end of the meetings.

2. Approval of the minutes of the previous meeting

- 2.1 La Jolla meeting, Document IEEE P802.11-92/134: by consensus
- 2.2 Agoura Hills meeting, Document IEEE P802.11-93/14: by consensus
- 2.3 Matters arising from the minutes: none.

3. Reports

3.1 Report from the Executive Committee, by Vic Hayes

JTC-1 International Program Fees

Information will be posted. 802.11's opinion that we should pay only for the meeting was reported.

Subscription service

May be limited to credit card charging only. Does anyone have any objections:

Discussion:

Dave Bagby: would never call a company and give them my credit card number and tell them to use it as they choose. This is an open PO to be processed later, which is a difficult way to work. The open ended aspect is the problem - will give them a credit number every call individually.

Peter Chadwick: objects because an open invitation to use your credit card can be hard to stop.

unidentified: sees no problem with it. A lot of companies offer this and if there is a written mandate to start it is not hard to stop.

Vic: two objections, no other problems?

Roger Pandanda: what's wrong with the way it's done now?

Vic: that's still there. But this system avoids the delay, with a subscription service you get it as fast as the members - it can save 4 to 6 months.

Roger: X.3 has a yearly subscription.

Paul Eastman: IEEE objects to someone outside of IEEE collecting money and holding, which is spent for IEEE services. If the funds went into the computer society and the money was then feed to Alphagraphics that would one way. This way is an alternative to writing a large check up front. What if you paid for 78 pages and the document turned out to be 80? Over a five year period another group has gone \$40,000 in the hole doing this. It can still be done on individual purchases if you don't like the blank cheque### method.

Vic: there are 4 people objecting to the service now?

Paul: do they object to the service with the option that you can get the documents without doing this. You can order individually, this is just for people who want to do it automatically, and get express service.

Vic: one objection is withdrawn, we are down to 3 objections.

Operating Rules

Updating to coincide with Transition from Project 802 sponsored by TCCC to LAN MAN Standards Committee, LMSC

Technical Plenary on Wednesday

802.9 PAR for 802.9 re: Access point inter networking

Discussion:

Dave Bagby: who assumed that we wanted this?

Vic: I made that assumption.

Fee standards distribution

802.31 - 10BASE-T

802.4b - Redundant Media

802.10 - SDE

Availability of these documents: Tues. 2-5 chairman's list. Wed 1-5 voters of all WGs; Thursday 9-3 registered attendees.

IEEE Style Template - Technical editors, see Christin Dittmann for file.

Tutorials - see the IEEE 802 Meeting Agenda

PCMCIA - Liaison interest identified - next plenary this will be discussed.

July 1994 meeting - changed to Florida.

4. Registration of contributions to be presented

Assigned to the MAC/PHY joint meeting: 93/28, 93/30, 93/36

Assigned to the PHY subgroup: 93/25, 93/32, 93/34, 93/37, 93/38

Assigned to the MAC subgroup: 93/21, 93/22, 93/23, 93/24, 93/26, 93/29, 93/33, 93/35, 93/39

Assigned to full working group: none

5. Adoption of Agenda: by consensus

6. Unfinished Business:

(1) Approval of Agoura Hills financial statement

55 attendees paying US\$ 78 each. 54 paid.

total expenses	4361.35
total income	<u>4212.00</u>
shortage	149.35

Xircom agreed to absorb this shortage subject to the collection of the fee of the attendee that missed the payment.

Motion #1: **To accept the financial statement from the Agoura Hills meeting.**

Moved by: Wayne Moyers

Seconded by: Jan Boer

Motion Discussion: none

Approved: 21 Opposed: 0 Abstain: 0 *Motion #1 passes*

The chairman thanks Xircom for holding the meeting and absorbing the negative balance.

(2) Vice-chairman

One application received so far. John McKown is accepted by acclimation.

7. New Business

Larry van der Jagt and Dave Bagby object to the fact that when they are responsible and make copies before they come they have to pay themselves, whereas if they don't copy before the meeting it gets charged to the \$200 meeting fee.

Number of people to go to the MAC subgroup (16). To go to the PHY group (a lot). So PHY group gets this room, MAC group gets the smaller room.

There is a room reserved for groups that want to meet after 6 PM. Anyone who wants it should see Vic.

8. Adjourn for subgroups - 4:50 PM

**Tuesday AM, 9 March, 1993
MAC and PHY subgroups**

**Wednesday AM, 10 March, 1993
Joint MAC/PHY**

**Wednesday (remainder) AM & PM, 10 March, 1993
MAC and PHY subgroups**

**Thursday AM, 11 March, 1993
MAC and PHY subgroups**

**Thursday PM, 11 March, 1993
Full Working Group**

The meeting was reconvened at 1:15 PM, by chairman Vic Hayes, with Carolyn Heide secretary.

9. Opening

9.1 Announcements

Important Information Concerning Document 93/43

- ETSI TC RES has agreed that certain RES-10 (HIPERLAN) documents may be distributed in 802.11

- 802.11-93/43 is an **internal RES-10 draft version** of the HIPERLAN Services and Facilities technical Report (from Dec. 1992. permission has been sought from the chair of RES-10 to distribute this version here).

- the final services and facilities report will be available (very shortly). Order copies from the ETSI secretariat. Details on the front of 93/43 and in the minutes (Doc. reference ETR.069).

- this paper is not available from Alphagraphics. If you are interested order the final version from ETSI.

9.2 Document update: Documents up to 93/43 have been distributed.

9.3 Agenda Adjustments: none

10. Reports from sub and ad-hoc groups

10.1 MAC, by Dave Bagby

(1) Papers Presented and Discussed:

- 93/21: Security Aspects of Wireless LAN standards.
- 93/23: A Clarification of Concerns in 93/21
- 93/28: An introduction to 802.10.
- 93/22: Further exploration of Transactions and Name Spaces.
93/22R1: Revised doc as result of work this week
Will be in next mailing.
- 93/40: Wireless Access Method and Physical Layer Specifications.
- 93/29: Wireless LAN MAC protocol: Data Compression as a MAC option to improve effective Throughput.
- 93/24: ATM Cell Based Access Method for Wired and Wireless Local Distribution.
- 93/26: Comparison of Regular and Async Time Division Multiplexing
- 93/35: Fair Control in Contention-Based MAC for Wireless LANs
- 93/39: On the GRAP - A proposed MAC protocol.
- 93/33: 802.11 MAC Requirements and Comparison Criteria.

(2) Progress on Jan 93 Agenda Subjects.

Infrastructure Services

Functions required for primary services determined at this meeting.
Further work anticipated on remaining services.
Need for Authentication revisited (No change from adopted January position.)

Network Management Functionality

No presentations received at this meeting.

Discussion of MAC/PHY Interface

Discussion during Joint MAC/PHY meeting.

(3) Progress on Jan 93 Agenda Subjects.

Tutorial on 802.10

Introduction prepared by Leon Scaldeferri.
Initial impressions favorable.
802.10 document received at this meeting.
Group to study 802.10 before May meeting.

Information to enable MAC comparisons during May mtg.

Comparisons expected for MAY, will be a major focus of the mtg.
Other subjects contributed at this meeting.
MAC proposals, additional contributions (GRAP, WHAT, and ATM approach).

Issue processing and closing:

Due to large number of papers received in conjunction with the plenary meeting schedule, less time was available for issue processing.
Formal resolution of several issues.
Some new issues created.

(4) Issues Processed at March 93 meeting.

Issue 6.4: How will Authentication be specified?

- Strong feeling that 802.10 will do the job, but we all want to read the recently released standard before closing the issue.
- Closure anticipated at May meeting.

Issue 6.6: Is there additional work on security that needs to be done in 802.11 in addition to the work that is done by 802.10?

- Strong feeling that 802.10 will do the job, but we all want to read the recently released standard before closing the issue.
- Closure anticipated at May meeting.

Issues 6.7 & 6.8: How does reassociation interact with authentication & privacy?

- Strong feeling that 802.10 will do the job, but we all want to read the recently released standard before closing the issue.
- Closure anticipated at May meeting.

Issues 6.3: How does unauthorized network access impact MAC throughput?

- MAC subgroup discussion:
 Unauthorized (failure of authentication) stations can not access the network, therefore no direct impact.
 We now interpret "unauthorized" to be equivalent to an interferer, thus the issue moves out of the security section.
 Are repeated "legal" requests that fail considered interference? If not should this issue be moved?
- Recommendation: To clarify and move the issue to the performance section.
- MAC subgroup vote passed (10,0,0).

Motion #2: to accept this recommendation.

Moved by: the MAC subgroup
 Seconded by: Simon Black

Motion Discussion: none

Approved: 17 Opposed: 0 Abstain: 2 **Motion #2 passes**

Issue 5.3B: What logical functions are needed to provide the defined infrastructure services?

- Recommendation to split in to sub issues:
 5.3B: Distribution, Association, Disassociation, Reassociation. Closed per 92/22R1.
 5.3C: Authentication, Privacy, Integration, Network Management. Still Open.
- MAC subgroup vote passed (12,0,3)

Motion #3: to accept this recommendation.

Moved by: the MAC subgroup
 Seconded by: Paul Eastman

Motion Discussion: none

Approved: 20 Opposed: 0 Abstain: 2 *Motion #3 passes*

Issue 6.2: Does the PHY layer perform or support the security function?

- Recommendation: No
- MAC subgroup vote passed (16,0,1)

Motion #4: **To accept this recommendation.**

Moved by: the MAC subgroup
 Seconded by: Tom Siep

Motion Discussion: none

Approved: 22 Opposed: 0 Abstain: 2 *Motion #4 passes*

Issue 4.4: Does the 802.11 standard support geographic coexistence of multiple overlapping 802.11 networks?

- MAC subgroup discussion:
 Implication is same channel coexistence - because if different channel, no issue to solve
- Recommendation: yes
- MAC subgroup vote passed (16, 0,0)

Motion #5: **to accept this recommendation.**

Moved by: the MAC subgroup
 Seconded by: Tom Siep

Motion Discussion: none

Approved: 23 Opposed: 0 Abstain: 0 *Motion #5 passed*

Issue 4.5: Can a STA be a member of an Ad-hoc network and a non AD-hoc (infrastructure) network at the same time?

- Recommendation: No
- MAC subgroup vote failed (9, 8, 0)

Issue 5.4: Is the interface to the DS performed at the MAC layer, PHY layer or both?

- Recommendation: MAC
- MAC subgroup vote passed (13, 0, 0)

Motion #6: **to accept this recommendation.**

Moved by: the MAC subgroup
 Seconded by: Simon Black

Motion Discussion: none

Approved: 25 Opposed: 0 Abstain: 2 *Motion #6 passes*

(5) New issues from March 93 meeting

Shall 802.11 require a data compression feature in the MAC?

Shall 802.11 specify one or more publicly available, privacy algorithms which all stations shall be required to support (one privacy option is to be "none")?

Discussion:

Bill Stevens: publicly available - does this mean public domain vs licensed? (i.e. free or paid for.)

Bob Crowder: the motion originator said less than \$200, not free.

(6) Discussion of changes in draft standard since last meeting.

No objections presented. This is probably something that should be done here in the working group plenary as well. We should all read the draft standard in between revision. It is easier stop things and comment now than it will be later.

Discussion:

Wayne Moyers: is there any consensus on the meaning of the term 'interoperability'? Does this mean the minimum level that can be met?

Larry van der Jagt: if you have two stations, they have some a-priori knowledge of what they are using to communicate. You take one of them away and bring in a station from another manufacturer and when the options are set the same they can talk. That's what interoperability means.

Dave B: the MAC subgroup did not try to define that word this week, so this is not an appropriate place for this discussion.

(7) MAC Agenda Subjects and Goals for May 93 mtg.

1. Comparison of MAC proposals vs. Infrastructure services, functional requirements and other adopted requirements.

- Request analysis by proposal authors
- Request identification of weaknesses as well as strengths.
- Goal: To produce a comparison of the proposed MAC protocols to facilitate evaluation and potential improvement of the protocols.
- Comparisons will be used to evaluate proposals, drive convergence and determination of MAC protocol.

2. Security transactions finalization.

- Expected resolution after studying 802.10 information.

3. Issue working.

- Members are expecting to spend time in small groups preparing recommendations for adoption by rest of MAC group.

Dave refers people to paper 93/33 which is good for MAC comparison criteria. It is a good list of things we'd like to know about any MAC proposal. Invites MAC authors to go through that paper and respond to the criteria in it. It is not our intent to use those things as a report card to judge pass/fail, but rather to start discussion of MACs in those areas. If authors don't bring such analyses we will do it as a group.

10.2 PHY, by Larry van der Jagt**(1) this meeting**

- a) went through FH PHY template and adjusted numbers
- b) DSSS presentations (2)

- c) IR PHY ad-hoc group meeting
- d) medium model work including data availability from NTIA
- e) discussed criteria for choosing one modulation scheme over another

Discussion:

Chandos Rypinski: was the discussion of modulation scheme in the context of FH?

Larry: yes, but it applied to all PHYs - how to benchmark one system against another. Bit error rate vs noise, that kind of thing.

(2) Motion taken

That people should submit FH modulation proposals at the next meeting with sufficient detail to be evaluated or risk not being considered at a future date (vote 33,0,6).

(3) Issue

What modulation scheme will be used for slow FH PHY (vote to adopt as an issue 23,1,7)

(4) Next Meeting Goals

- come away with preferred approach for FH PHY (in evaluating PHYs experimental evidence will weight more heavily than simulated data).
- move forward PHY templates
- move forward MAC independence level
- move forward channel model
- continuing discussions by IR ad-hoc group

Discussion:

Dave Bagby: what happened in the IR ad hoc group meeting?

Larry: it was mostly an organizational meeting.

Tom Baumgartner: discussed IR for the first time in a year. We are not trying to create another group, but to meet outside of conflict with the MAC and PHY groups. Tried to surface issues that are important to IR. The group will meet next Monday night of the Wilmington interim. If there are enough good formal submissions it might be necessary to review them in the full PHY subgroup - that will have to be worked out. One of the first critical subjects is attacking the state of the art in IR components.

10.3 Joint MAC/PHY, by Vic Hayes

Presentations of submissions 93/13, 93/30, and 93/36

93/36 referred to the PHY group for checking of the parameters.

The PHY subgroup promoted a discussion on why different hop rates are important for MAC development.

Passed motion "that the division of work be such that the media independent layer be defined by the PHY group and that the PHY group accept primary responsibility for defining the PHY related requirements of the MAC management box", vote (33, 2, 6).

No time to further discuss the submissions 93/13 and 93/30 for issues addressed (for next meeting).

11. Unfinished Business

11.1 Recap of Output Documents: The minutes, update to issues list and updated draft standard (maybe).

11.2 Recap of Document Distribution: distribution of 93/43 is subject to extension of copyright. 93/21 - 93/30, and 93/31 - 93/42 will be in the first mailing

11.3 Next Meeting

Wilmington Delaware May 10-13, 1993

Proposed attendance count - 31.

Bob Crowder says the financial situation for the Wilmington meeting is tight. If there is lots of money left over there will be lots of duplicating, if short of money there will be none. I.E. authors should bring copies of their submissions (Vic suggests 60 at least).

(1) Objectives for next meeting - see the PHY and MAC subgroup reports.

There has been a recommendation that the full working group review the draft standard changes each meeting. Vic will put an agenda item in the opening plenary to list things people want to discuss about the draft standard changes and assign time for working on those things if there are any.

(2) Last Mailing Date: April 20, 1993. March 22 for the first mailing and if you want anything to go into it warn Vic by the Friday before that.

11.4 Other Intermediate Meetings: none

11.5 Confirmation of July 1993, Meeting: July 12 to 16 in Denver Colorado. The venue was available at registration office.

Notice meeting list on past minutes and agenda said that the July 1994 meeting was Minneapolis, but that has been changed to Orlando, Florida.

The September meeting is intended to be in the Atlanta area.

12. New Business: none

13. Closure- meeting adjourned at 2:20 PM.

Appendix 1 Attendance list

Name	Company	communications	Voting member
ACHATZ Mr. ROBERT	US Department of Commerce	+1 303 497 3498	vm
AKERLUND Mr. SVEN OLOF	ELLEMTEL	+46 8 727 30 44	
AMY Mr. ROBERT	IBM Corp.	+1 919 254 4141 bobamy@vnet.ibm.com	
AUSTIN Mr. RAYMOND	Intel Corporation	+1 916 356 3997 raymond_k_austin@ccm.nt.intel.com	
BAGBY Mr. DAVE	Sun Microsystems	+1 415 336 1631 david.bagby@sun.com	vm
BAUCHOT Dr. FRÉDÉRIC	IBM France	+33 92 11 55 92	
BAUMGARTNER Mr. C. THOMAS	Spectrix	+1 708 491 4534	
BELANGER Mr. PHIL	Xircom	+1 415 691 2500 pbelange@xircom.com	vm
BIBA Mr. KEN	Xircom	+1 415 691 2500 kbiba@xircom.com	vm
BLACK Mr. SIMON	Symbionics	+44 223 421025 sab@symbionics.co.uk	vm
BOER Mr. JAN	NCR Systems Engineering B.V.	+31 3402 76483 jan.boer@utrecht.ncr.com	vm
BRADBERY Mr. JACK L.	AMP Inc M.S. 210-020	+1 717 561 6271	vm
BRILL Mr. CHARLES	AMP Inc	+1 717 561 6198	vm
BUAAS Mr. ROBERT A.	The Buaas Corporation	+1 714 968 0070 buaas@nosc.mil	vm
CARL Mr. ROB	Pulse Engineering Inc	+1 619 674 8272	
CHADWICK G3RZP Mr. PETER E.	GEC Plessey Semiconductors	+44 793 518080 449637	
CHEN Dr. KWANG-CHENG	National Tsing Hua University	+886 35 715131 X4054 chenkc@ee.nthu.edu.tw	vm
CROWDER Mr. ROBERT S.	Ship Star Associates Inc	+1 302 738 7782 0002892306@mcimail.com	vm
DIEPSTRATEN Mr. WIM	NCR Systems Engineering B.V.	+31 3402 76482 wim.diepstraten@utrecht.ncr.com	vm
EASTMAN Dr. PAUL		+1 602 993 7085 p.eastman@compmail.com	vm
ELROM Mr. ITZHAK	Sim Ware Inc.	+1 313 422 5470	
ELY Mr. RICHARD	Unisys	+1 408 434 4312	vm
ENG Mr. JOHN W.	Digital	+1 508 486 7734 eng@nac.enet.dec.com	vm
ENNIS Mr. GREG		+1 408 356 4775	

Appendix 1 Attendance list

<u>Name</u>	<u>Company</u>	<u>communications</u>	<u>Voting member</u>
FETTEROLF Dr. PETER	Arthur D. Little	+1 617 498 5445 Peter.fetterol@adlittle.com???	
FLATMAN Dr. ALAN V.	LAN Technologies	+44 260 297966	vm
FULTON Mr. PAUL R.	Netcore Technology	+1 214 618 1952	
GERSHON Mr. EUGEN	AMD	+1 408 987 2408 gershon@brahms.amd.com	
HAREL Mr. HAIM	NEXUS Telecomn Systems Ltd	+972 3 5710226	
HARRER Dr. JAMES	Pulse Engineering Inc	+1 619 674 8206	
HARTLEN Mr. BRYAN R.	IBM Canada Ltd.	+1 416 448 4545 bryanh@vnet.ibm.com	
HAYES Mr. VICTOR	NCR Systems Engineering B.V	+31 3402 76528 Vic.Hayes@Utrecht.ncr.com	vm
HEIDE Ms. CAROLYN L.	Spectrix Corp	+1 708 491 4534 71041.3262@compuserve.com	vm
HUHN Mr. BILL	Motorola Inc	+1 708 576 7207 bill_huhn-cinfo3@email.mot.com	vm
HUTCHINSON Mr. DOUGLAS A.	IBM Canada Ltd	+1 416 946 5523	vm
ISHIFUJI Dr.Eng. TOMOAKI	HITACHI Central Research Lab.	+81 423 23 1111 ishifuji@crl.hitachi.co.jp	vm
JAGT Mr. LARRY van der	Knowledge Implementations Inc	+1 914 986 3492 kiilvdj@atmail.com	vm
JOHNSON Mr. DONALD C.	NCR Corporation WHQ 5E	+1 513 445 1452 donald.c.johnson@daytonoh.ncr.com	vm
KIYONO Mr. MIKIO	NEC Technologies Inc.	+1 408 433 1457	
KONG Mr. NING	National Semiconductor	+1 408 721 5182 cnxksc@tevm2.nsc.com	
LEESON Dr. DAVID B.	California Microwave	+1 408 720 6215 0005543629@mcimail.com	vm
LEMAUT Mr. FRANÇOIS	IBM France	+33 92 11 46 29 lemaut@lgevmsa.vnet.ibm.com	
LEONHARDT Mr. KEN	Motorola	+1 708 632 3376	
LUQUE Mr. ANDY	Open Communications	+1 503 389 6512	
MACNAB Mr. COLIN L.M.	GEC Plessey Semicond	+1 408 439 6075	
McKOWN Mr. JOHN	Motorola	+1 708 632 6551 mckown@whitefish.rts.mot.com	vm
MAHANY Mr. RONALD	Norand Corporation	+1 319 369 3552 mahanyri@norand.com	vm
MAZOR Mr. JOSEPH	Intel Israel LTD	+972 4 355075 mazor@iil.intel.com	vm

Appendix 1 Attendance list

Name	Company	communications	Voting member
MIURA Dr. AKIRA	Panasonic Technologies Inc.	+1 415 858 1000 miura@tadw.panasonic.com	vm
MOREIRA Eng. ADRIANO J.C.	Universidade de Aveiro	+351 34 25085 x3048 adriano@ci.ua.pt	
MOYERS Mr. WAYNE D.	WiSE Communications Inc	+1 408 376 0450	vm
NATARAJAN Dr. K.S.	IBM T.J. Watson Research Center	+1 914 784 7844 nataraj@watson.ibm.com	vm
PANDANDA Mr. ROGER	MCS	+1 619 546 2828 rpandanda@attmail.com	vm
PAZ Mr PETER	Tadiran Ltd	+972 3 5574295	
PETRELLA Mr. BOB	DEC LKG 2/2 X10	+1 508 486 5797	
REHM Mr. DENNIS	NCR MED	+1 303 226 9602 dennis.rehm@fortcollins.ncr.com	
ROSENBAUM Mr. ROBERT H.	WINDATA	+1 508 393 3330	vm
ROTHENBERG Mr. MICHAEL	LANNET Data Communications LTD	+972 3 6458422 mrot@larnet.com	vm
RYPINSKI Mr. CHANDOS	LACE Inc.	+1 415 389 6659 rypinski@netcom.com	vm
SARAF Mr. ASHOK	Fujitsu	+1 214 997 7773	
SCALDEFERRI Mr. LEON S.	NSA R22	+1 301 688 0293 lsacald@afterlife.ncsc.mil	vm
SHENG Mr. J. MAX	Toshiba America Information Systems Inc	+1 714 587 6679 maxs@tais.com	vm
SIEP Mr. THOMAS M.	Texas Instruments	+1 214 917 5919 tsiep@lobby.ti.com	vm
SILBERMAN Mr. NATHAN	California Microwave Inc	+1 408 720 6462 nsilberman@mcimail.com	vm
SIMON Mr. FRANÇOIS Y.	IBM	+1 919 254 4584 fygs@vnet.ibm.com	vm
SIT Mr. RAYMOND		+1 916 356 2839	
SOCCI Mr. JERRY	National Semiconductor	+1 408 721 5590	
STEVENS Mr. WILLIAM M.	Apple Computer Inc	+1 408 974 6307 stevens.bill@applelink.apple.com.	vm
TAYLOE Mr. DAVID C.	AMP Inc.	+1 717 540 3427	
TSOULOGIANNIS Mr. TOM	Telesystems	+1 416 441 9966	vm
TURNER Dr. EDWIN	ICL	+44 344 476249	
TZE Mr. RYAN H.	ToshibaAmerican Information Systems	+1 714 587 6769 ryant@tais.com	vm
VALADAS Eng. RUI T.	Universidade de Aveiro	+351 34 25085 x3047 rv@zeus.ci.ua.pt	

Appendix 1
Attendance list

<u>Name</u> <u>member</u>	<u>Company</u>	<u>communications</u>	<u>Voting</u>
WALVIS Mr. DICK	National Semiconductor	+1 408 721 7761 dickw@galaxy.nsc.com	
WASSON Mr. GREGORY	AMP Inc	+1 717 986 5288	
WEISS Mr. STEVEN	DCA	+1 408 432 9111 Steve_Weiss@pacdata.com	
YEUNG Ms. PAULINE	National Semiconductor	+1 408 721 4439 pauline@galaxy.nsc.com	

Appendix 2

Tentative Meeting Schedule

Date	Month	Year	Place	Type	Location	Host
10-13	May	1993	Wilmington, DE	Inter	Radisson Hotel	Ship Star
12-16	July	1993	Denver, CO	Plenary	Sheraton Denver Technology Center	
20-23	Sept	1993	Atlanta, GA	Inter	TBD	LXE
08-12	Nov	1993	W Palm Beach, FL	Plenary	Ramada Resort	
TBD	Jan	1994	TBD	Inter	TBD	Open
07-11	March	1994	Vancouver, BC	Plenary	Hotel Vancouver	
TBD	May	1994	TBD	Inter	TBD	Open
11-15	July	1994	Orlando, FL	Plenary	Walt Disney Swan	
TBD	Sept	1994	TBD	Inter	TBD	Open
07-11	Nov	1994	Incline Village, NV	Plenary	Hyatt Regency, Lake Tahoe	

We received invitations to host a meeting from GM to Oshawa (Ontario, Canada), DEC to Boston area, and ICIL to Hong Kong.

Appendix 3

Document list

Documents distributed

Doc Number	Title of document
92/127r	Draft proposal for a Frequency Hopping Spread Spectrum PHY standard (Nathan Silberman, CMI)
93/22	Further explorations of Transactions and name spaces (Dave Bagby, Sun) will be updated to 22r
93/23	Clarification of 93/21 concerns (Dave Bagby, Sun)
93/24	ATM based access method for wired and wirelsss local distribution (Chandos A. Rypinski, Lace, Inc.)
93/25	Radio PHY layer for use with medium independent MAC (Chandos A. Rypinski, Lace, Inc.)
93/26	Comparison of regular and asynchronous time division (Chandos A. Rypinski, Lace, Inc.)
93/27	Venue for May 1993 meeting (Wilmington)
93/28	Security presentation (Leon S. Scaldeferri, FWUF)
93/29	Wireless LAN MAC protocol: data compression as a MAC option to improve effective throughput (Frédéric J. Bauchot, IBM)
93/30	WLAN MAC protocol: PHY layer transparancy (Frédéric J. Bauchot, IBM)
93/31	reserved
93/32	Modulation schemes for Frequency Hop PHYs (Lourens van der Jagt, KII)
93/33	802.11 MAC: Requirements and Criteria (Wim Diepstraten, NCR)
93/34	Modulation for Frequency Hopping PHY (Nathan Silberman, CMI)
93/35	Fair Control in Contention-Based MAC for Wirless LANs (Yoshihiro Takiyasu, Eiichi Amada, Tomoaki Ishifuji, Hitachi)
93/36	Retransmission Probability and Throughput of SFH in Rayleigh Fading Indoor Channel of Multi-Cell Environment (Tomoaki Ishifuji, Hitachi)
93/37	Proposal for 2 Mbit/s DSSS PHY (Jan Boer, NCR)
93/38	Draft Proposal for DSSS PHY (Ryan Tze and Max Sheng, Toshiba)
93/39	On the GRAP - a proposed MAC protocol (K-C Chen, ITI)
93/40 +40a	The Wireless Hybrid Asynchronous Time-bounded MAC protocol (Phil Belanger and Ken Biba, Xircom)
93/41	Indoor Wideband propagation data (Robert J. Achatz, Peter B. Papazian, Michael Roadifer, NTIA)
93/42	Prediction of Coverage for DS modulation in a Frequency Selective Channel (Robert J. Achatz, NTIA)
93/43	ETSI, Radio Equipment and Systems (RES), HIPERLAN, Services and Facilities (Will be distributed subject to copyright release)

Appendix 3
Document list

Document number assignments

93/44	Tentative Minutes of the IEEE P802.11 Working Group, Plenary, Baltimore, 8-12 March, 1993
93/45	Tentative Minutes of the joint MAC/PHY group, Baltimore, 8-12 March, 1993
93/46	Tentative Minutes of the MAC group, Baltimore, 8-12 March, 1993
93/47	Tentative Minutes of the PHY group, Baltimore, 8-12 March, 1993
93/48	Tentative Minutes of the PHY-IR ad-hoc group, Baltimore, 8-12 March, 1993
93/49	Tentative Agenda for the interim meeting, Wilmington, 10-13 May, 1993
93/50	MAC proposal (Bob Crowder, Ship Star)
93/51	MAC comparison to the criteria (Bob Crowder, Ship Star)
93/52	Tentative Agenda for the IR-PHY subgroup meeting at Wilmington