

## Tentative Minutes of the IEEE P802.11 Working Group

**Interim meeting  
Agoura Hills, CA  
January 11-14, 1993**

**Monday, January 11, 1993, AM**

The meeting was called to order at 8:35 AM Vic Hayes, chairman IEEE P802.11<sup>1)</sup>, in the chair, Carolyn Heide secretary, Wayne Moyers managing document originals and copying, Marvin Sojka distribution and pigeon hole organization, and Leon Scaldeferri handling the attendance list. The agenda document for this meeting is 802.11-92\143 sent out in the November mailing.

**Objectives:**

- continue on the definition of architecture, such as: MAC/PHY interface; distribution service; management; security.
- Continue work on PHY definition and channel modeling.

<sup>1)</sup>The officers of the Working Group are:

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**1. Opening**

- 1.1 Roll Call: People in the room were identified from the hotel registration list.
- 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 802.11-92/00.1 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 participating 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 3 PM, lunch from 12 noon to 1:00.
- 1.5 Other announcements: Richard Lee has changed companies and can no longer hold the position of vice-chairman. Either at the end of this week or at the plenary we will select a new vice-chairperson. Those interested can speak to VIC off-line.

**2. Approval of the minutes of the previous meeting**

- 2.1 La Jolla meeting, Document IEEE P802.11-92/134: can't approve due to no quorum.
- 2.2 Matters arising from the minutes: none.

**3. Reports**

**3.1 Report from the Executive Committee, by Vic Hayes**

**New organization:**

802 Organizational rules will be updated and the new form will be implemented before the March 1993 Plenary Meeting: From a subcommittee in TCCC - Technical Committee for Computers and Communications - to a Standards Sub Committee reporting to the Standards Board (SAB) of the IEEE Computer Society.

**Alternative Mailing:**

Is a subscription to the mailing for those that do not have a right to receive the mailing for free. Now for all working groups. Still not ready

**Comments on NPRM 90-314:**

802.11 motion for FCC filing approved subject to comments from individual members. Update was quickly edited and faxed to Washington for filing on the Friday, together with a motion for late filing. Compare document 92/139 and 92/141 for differences.

**3.2 Report from the Joint Experts Meeting**

- 200 participants
- have been exposed to:

- our requirements and general product applications (in door, business)
- performance and functional aspects
- ad-hoc and infra-structure supported traffic
- Plan to have a common air interface by end 1993
- Rich Lee's observation:
  - the part 15 is being contemplated by many in the voice world as the region of spectrum for localized (e.g. cordless phone like) usage;
  - specifically the non-licensed will be the region where non chargeable traffic will reside (in building connection). But the devices are also contemplated to connect to the wide networks.
- conclusion
  - part 15 is felt as a temporary home for IEEE 802.11
- slides report from Rich Lee and the official report will be sent in the 2nd mailing.

**Discussion:**

Alan: part 15 includes 1.9 GHz?

Vic: yes.

**4. Registration of contributions to be presented**

Assigned to the MAC/PHY joint meeting: 93/01, 93/07

Assigned to the PHY subgroup: 93/04, 93/05, 93/06, 93/11

Assigned to the MAC subgroup: 93/02, 93/03, 93/08, 93/09, 93/10

Assigned to full working group: none

Appendix 3 shows the complete documents list.

**5. Adoption of Agenda: by consensus**

**6. Unfinished Business: none**

**7. New Business**

Dave Bagby: if we don't achieve a quorum are we going to meet all week even though we will have to do all the work over again at the plenary?

Vic: as shown in the operating rules in doc 92/00.2 we can close issues with the people here.

8. Adjourn for subgroups - 9:15 AM to convene subgroups at 10:20 AM.

**Monday AM (remainder) & PM, 11 January, 1993**  
**MAC and PHY subgroups**

**Tuesday AM, 12 January, 1993**  
**Joint MAC/PHY**

**Tuesday (remainder), 12 January, 1993**  
**MAC and PHY subgroups**

**Wednesday, 13 January, 1993**  
**MAC and PHY subgroups**

**Thursday AM & part of PM, 14 January, 1993**  
**MAC and PHY subgroups**

**Thursday PM, 14 November, 1993**  
**Full Working Group**

The meeting was reconvened at 1:10 PM, by chairman Vic Hayes, with Carolyn Heide secretary.

**9. Opening**

**9.1 Announcements**

Correction of the attendance list: Rene Martinelli's phone # should have last 4 digits 5526.

**9.2 Document update:** Documents up to 93/12 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:**

93/2 - Registration Scenarios for Wireless LAN MAC Protocol

93/3 - What are Ad-Hoc Wireless LANs? - A Viewpoint.

93/8 - Wireless Network security

93/9 - 802.11 DS Services Transactions  
93/10 - Time Bounded Implications Applied to Secure Services.

**2. Progress on agenda subjects**

**2.1 Additional DSS services?**

Any other categories of services we need from a DS?

No additional required categories Identified at this meeting.

**2.2 Network management functionality.**

What is needed? Why?

No presentations received at this meeting.

Initial model proposed was adopted.

**2.3 Authentication and Privacy**

What Authentication and Privacy levels do we need? How can we provide them?

3 Presentations received.

We would like a tutorial from 802.10 to understand what they provide.

WE may need liaison with 802.10 to communicate what our concerns and considerations are.

**2.4 DSS services -> conceptual information flow.**

What information / msgs are passed to/ from STAs?

1 Presentation received re how to accomplish the previously identified categories.

Impact on several issues, creation of new issues.

Comparison of MAC proposals vs. DSS services and conceptual information flow.

Produce a comparison of the submitted MAC proposals so that we can see the pros and cons of each and begin discussion of how to improve any deficiencies.

No comparisons received at this meeting, perception is that we are still a bit early for this, maybe two meetings from now.

**2.5 Discussion of parametric MAC/PHY interface approach.**

What does the MAC group think of the proposed approach?

No presentations received at this meeting.

**2.6 Issue processing and closing.**

Formal resolution of several issues.

Some new issues created.

Clarification and additional definitions created.

**3 Issues Processed**

**Issue 4.1: Will the standard support Ad-hoc nets?**

MAC subgroup vote on issue question: yes: 21; no: 0; abstain: 0.

**Motion #1:** to adopt MAC subgroup recommendation to close the 1st issue.

Moved by: the MAC subgroup

Seconded by: Tom Siep

Motion Discussion: none

Approved: 13      Opposed: 0      Abstain: 0      **Motion #1 passes**

**Definition of Ad-hoc**

During discussion of issue 4.1 the MAC subgroup defined "Ad-Hoc". Alternatives:

(1) 2nd paragraph and 3 bullets from first page of 93/3.

(2) Ad-hoc network: a network created for a specific purpose, typically in a spontaneous manner. The principal characteristic of an ad hoc net is that the act of creating and dissolving the net is sufficiently straightforward and convenient so as to be achievable by non-technical users of the network facilities (i.e. no specialized "technical skills" are required) with little or no investment of time and no additional resources required beyond the stations which are to participate in the (ad hoc) network.

Supporting paragraphs for alternative 2 (not part of the definition):

Creation and dissolution of an Ad-Hoc network should involve little or no "site preparation". The more time and effort required to create or tear down an Ad-Hoc network, the less Ad-Hoc it will be.

- The characteristic of "spontaneity" more or less precludes a requirement to "register" or otherwise obtain permission for creation of an Ad-hoc network.
- The requirement of "support for Ad-Hoc networking" shall be a *Functional requirement*, which is met when the committee can agree that the final 802.11 specification provides for implementation of 802.11 conformant networks which satisfactorily support the concept of Ad-Hoc networking. This is a "qualitative" judgement which may, or may not, influence the choice of particular technical approaches in development of the 802.11 standard.

#### Key Arguments

- "Ad-hoc-ness" not == degree of infrastructure.
- Ad hoc should be judged from user viewpoint.
- Should not preclude as well as not require more than STA hardware only.

#### MAC subgroup vote for adoption of Ad-Hoc definition

Para and bullets from 93/3: 2  
 Functional definition paragraph: 13  
 Abstain: 1

**Motion #2:** to accept this definition of ad-hoc network.

Moved by: the MAC subgroup  
 Seconded by: Tom Siep

#### Motion Discussion:

François Maut: the statement 'precludes a requirement to register' - does this mean that someone can attend the ad-hoc without having been authorized to do so?

Dave B: ad-hoc can still have all the same privacy and security as a non-ad-hoc. We just wanted to ensure that to establish an ad-hoc you didn't have to bring anything other than your stations, but also not preclude that.

Approved: 12      Opposed: 1      Abstain: 1      *Motion #2 passes*

#### Issue 6.5: Is there a requirement for Security and Privacy?

##### Arguments:

ref 93/2, 93/8, 93/10 - all imply yes as they discuss how in some detail and assume the need for the service.

##### Discussion

- We don't need to "do" security, we need to have hooks to use 802.10 just as 802.3, 802.5 etc. are able to work with 802.10.
- If we need a different or additional service from 802.10, we can make our case to them and ask for 802.10 modifications.

MAC subgroup vote: Yes-13; No:-0; Abstain-1

**Motion #3:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup  
Seconded by: Greg Scott

**Motion Discussion:**

Francois Maut: do you imply that you must have some service from 802.10 to make wireless as secure as wire?

Dave B: as a separate issue we looked at do we, as minimum, require a level of security as secure as a wire - we reached no consensus on that minimum level.

Francois: you are requiring that existing infrastructures used have 802.10?

Dave B: only if you want the services of 802.10.

Leon: we are voting on "is there a requirement for privacy and security". How that might be done has not been answered.

Approved: 14      Opposed: 0      Abstain: 0      **Motion #3 passes**

**12.2B: DSS interfaces exposed?**

**Arguments:**

5.1 closure decided that we will specify DS interfaces - so to be useful we must expose them.

After extensive discussion the issue was clarified to include the definition of "infrastructure" as part of the issue.

**Clarified Issue:**

Are the Infrastructure interfaces exposed?

Where "infrastructure" is defined by: Infrastructure = DS + AP(s) + Portal(s). An infrastructure contains one or more APs and zero or more Portals in addition to a DS. Within the Infrastructure there are two exposed interfaces; Between STAs and APs, and between APs and a DS. Additionally, DS Services are provided between pairs of 802.11 MACs.

MAC subgroup vote to close issue including adoption of definition: yes-16; no: 0; abstain: 1

**Motion #4:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup  
Seconded by: John McKown

**Motion Discussion:**

Tom T: if only one AP is the DS any different?

Dave B: we did allow cases with a null DS.

Greg Scott: are portal and AP interchangeable?

Dave B: no, a portable provides interface to existing wired networks.

Approved: 12      Opposed: 0      Abstain: 2      **Motion #4 passes**

**4.2: Will the standard support infrastructure networks?**

**Arguments:**

Much of the discussion overlapped the discussion of issue 12.2B

MAC subgroup vote: yes-11; no-0; abstain-5

**Motion #5:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup  
Seconded by: Tom Siep

**Motion Discussion:**

Tom T: what does this mean?

Dave B: we used to think ad-hoc and infrastructure were opposite ends of the same scale. Now we have a better understanding that this means ESS - more than one BSS. Not a network of infrastructures, but a network with infrastructure.

Approved: 14      Opposed: 0      Abstain: 1      **Motion #5 passes**

**Issue 5.3 What are the Distribution System's functions that are needed?**

Issue was split in two as higher level categories appeared to have consensus, while the next level of detail is still under active discussion.

**5.3A: What are the Infrastructure Services required?**

Initial Infrastructure Services adopted:

- Association (creation of STA to AP mappings)
- Reassociation (movement of mappings)
- Disassociation (removal of mappings)
- Distribution (data delivery)
- Authentication (Identity verification)
- Privacy (of payloads)
- Integration (ability to connect to existing LANs)
- Network Management (usual network management stuff)

MAC subgroup vote for adopting this set: for-6; against-0; abstain: 1

**Motion #6:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup  
Seconded by: John McKown

**Motion Discussion:** none

Approved: 13      Opposed: 0      Abstain: 1      **Motion #6 passes**

**Issue 5.3B: What logical functions are needed to provide the defined Infrastructure Services?**

Alternatives to be filled in from this week's minutes.

Status: open

**Issue 15.4 What are the services or functions unique to wireless networks?**

Possible additional unique function:



- We must provide an equivalent to wired net physical security to avoid compromising security assumptions of existing LANs.
- Is this a minimal functional requirement we want to adopt?

MAC subgroup straw poll:

- How many would like this as a mandatory min req? 5
- How many would like this as an optional min req? 12
- How many don't want this? 1

Tom Sien explains he was the one who voted here because that there is no inherent security in wire.

Status: open

**Issue 15.8: Do all STAs and all infrastructures support TB services?**

Discussion

- At last meeting consensus was no, still true?
- To say no, we must be convinced that the creation of an option is necessary (issues 1.4 re options).
- Non-support in any particular station should not prevent other stations from using TB services.
- refine "support"
- Some desire to break out STA vs infrastructure support.
- If STA asked for optional service - would like explicit response that is "not supported" rather than ignored.
- Saying yes => we are required to use infrastructures that don't exist today.

Status: open

**Issue 16.8 - How will standard address ability for handoff between service areas?**

Issue clarified to be "What service area transitions will the standard support?"

There are three service area transitions of significance to 802.11:

**NO TRANSITION**

- 2 sub cases that are indistinguishable
- Static - not moving.
- Local movement - within PHY range of STA and AP - e.g. movement within a BSS
- Supported functionality.

**BSS TRANSITION**

- STA Movement from one BSS to another BSS within one ESS.
- Seamlessly supported functionality.
- What the standard does to support this transition is called "reassociation".

**ESS TRANSITION**

- STA Movement from a BSS in one ESS to a BSS in another ESS.
- Supported only in the sense that you can move, but 802.11 can not guarantee maintenance of connections, in fact we can probably guarantee that this is a disruption of upper layer connections.

MAC subgroup vote: adopted unanimously.

**Motion #6:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup  
Seconded by: Carolyn Heide

**Motion Discussion:**

Bob Buaas: ESS transition - this is what the cellular voice system is trying to accomplish and is very close to doing so right now.

Wim: they are trying to accomplish that for 2 different networks you where can roam from one to another but they are of different "ownership". ESS's are not connected.

Tom T: joining two ESS's just creates a larger ESS.

Bob B: agrees then that this is not the same thing.

John McKown: diversity (e.g. antenna) - when you say static is indistinguishable from moving in PHY range you are saying that diversity is handled below the MAC.

Phil Belanger: by implication we have said that.

Approved: 13      Opposed: 0      Abstain: 0      *Motion #6 passes*

**Issue 16.2a - What is roaming?**

Moved: closed as MOOT as the term refers to concepts outside the scope of 802.11 that we can neither support or effect - see paper 92/126.

MAC subgroup vote: For-10; against-0; abstain-0

**Motion #7:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup  
Seconded by: Wim Diepstraten

**Motion Discussion:** none

Approved: 13      Opposed: 0      Abstain: 0      *Motion #7 passes*

**Issue 16.2b - What is Handoff?**

Moved: close the issue, use the term Reassociation to describe the transition between BSSs.

MAC subgroup vote: for-11; against-1; abstain-2

**Motion #8:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup  
Seconded by: Bob Buaas

**Motion Discussion:**

Tom Tsonologiannis: this means there will be an issue saying what is re-association?

Dave B: yes, we have an issue for that.

Approved: 11      Opposed: 0      Abstain: 2      *Motion #8 passes*

**Issue 13.1 - what control and observation features are needed for network management support?**

Discussion at Jan 93 meeting:

- proposal to accept this model as starting point for net management functionality.
- only model proposed so far.

Moved: To adopt the model in 92/98 and 92/124 as the starting point for our network management functionality.

MAC subgroup vote: For-10; against-0; abstain-0

**Motion #9:** to adopt this MAC subgroup recommendation.

Moved by: the MAC subgroup

Seconded by: Jim Schuessler

Motion Discussion: none

Approved: 12      Opposed: 0      Abstain: 1      **Motion #9 passes**

**New issues**

- What is the direction of the Association service transaction?
- How to determine what APs are present?
- How does reassociation interact with authentication?
- How does reassociation interact with Privacy?
- Do we need an explicit reassociation transaction?
- What is the direction of the reassociation transaction?
- Given a FH PHY, who is responsible for the real time aspects of the PHY?
- Do we support geographic coexistence of multiple overlapping 802.11 networks?
- Can a STA be a member of an Ad-hoc network and a non-ad-hoc network at the same time?

MAC subgroup vote to open these issues: For-10; against-0; abstain-0

**Motion #10:** to accept recommendation to open these as new issues

Moved by: the MAC subgroup

Seconded by: Bob Buaas

Motion Discussion: none

Approved: 13      Opposed: 0      Abstain: 0      **Motion #10 passes**

**4. Draft standard discussion**

Discussion of changes in draft standard (92/140) resulting from previous meeting closed issues:

Not much discussion at this meeting.

At each meeting we intend to review the changes since the last meeting for accurate representation of decision made.

Draft text should come from authors of proposals adopted - we should not expect the editor to also be the author.

**Discussion:**

Bob Buaas: will sidebars be used in revisions or new documents or what?

Francois Simon: right now page 4 has a major changes list, which will always be there with the changes since the last plenary.

Dave B: are change bars difficult - I would find them helpful for the last revision only. History gets you to the section, change bars show the actual words changed.

Jim Schuessler: don't stop the page 4, although change bars would be nice too.

Vic: doesn't want to send the entire document every time, so has asked François to send only changed pages. This will short circuit the change bar mechanism.

#### 5. Agenda subjects and goals for March

##### Infrastructure Services:

What information / transactions cross the exposed interfaces?

Goal: Determine functional specification of transactions needed to support adopted Infrastructure services.

##### Network management functionality.

What is needed? Why?

Goal: further refinement of the adopted management functionality.

##### Discussion of MAC/PHY interface.

Evaluation and discussion of proposed parametric approach.

Investigation of PHY-independent MAC sub layer assuming a SFH PHY.

Goal: Initial specification of functionality of the PHY dependent part of the MAC given a SFH PHY.

Determine what functionality we may need to request from other 802 groups. (Dave asked Vic if an 802.10 presentation can be arranged for the next plenary. Vic says they have been asked and say they have too limited resources. Bob Buaas is one of our liaisons to that group and says that they are working on getting us assistance.)

Initial exploration of impact of provision for power management abilities. (Bob Buaas requested the use of some more explicit term than just "power management", such as "power consumption", to differentiate from transmit power considerations.)

##### Further Issue processing.

General goal: Provide sufficient information to MAC authors to enable them to bring contributions for the May meeting

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

Goal: To produce a comparison of the proposed MAC protocols to facilitate evaluation and potential improvement of the protocols.

#### 10.2 PHY, Bob Buaas

##### Channel Modelling:

Review of Rappaport/Siddel

Produce new model - FIR Based

Approach developed (subgroup to handle this prior to March meeting)

##### Frequency Hop PHY:

2 papers presented

Working on MAC-PHY Interface Spec.

Using decision tree approach

Partial progress made down the paths in tree for:

hop rate, power level control, channel data rate, fragmentation, timing/control, and use of hop interval

Issues process entered after next meeting

##### E-mail Document Server/Newsgroup:

Set-up newsgroup

Set-up e-mail server  
Encourage Internet participation

**Goals:**

- channel model progress
- FH PHY modulation analysis and review
- FH PHY decision tree progress
- FH PHY acquisition/synchronization discussion
- DS PHY contribution.

**General Discussion:**

Dave Bagby: newsgroup - isn't the current reflector acceptable?

John McKown: there is more functionality in a newsgroup.

Bob B: newsgroup provides a digest and archive services, which may be better than a series of unordered messages.

Dave B: membership will be available to any 802.11 member?

John: newsgroup could also involve RES-10 members. They are used to working with newsgroups.

Dave B: admirable goal to try to get RES-10 support, but implies that all work will be submitted to RES-10. Should we be doing that?

Bob B: that's why it is useful to separate dialog from documents.

John: intends to have as much exposure of documents both ways as possible. Believes ETSI has taken a vote that its OK to expose documents to us, after one by one approval.

Vic: IEEE is an open forum. Our documents are all public but there are concerns. When people see documents with our header they think this is 802.11 position. This is why "submission" printed in the footer is so important. When we set up the reflector we thought it was preferable to keep it to members. To go to a more public method we need discipline amongst the users.

John: please make the whole world eligible and exclude people when problems occur.

Bob B: proposing to investigate how much can be done and do it as expeditiously as possible. A fair amount of work is required here, and an administrator is required. Open to recommendations from people who are experienced in this stuff.

John: a recent issue of IEEE Spectrum discusses plans for IEEE using e-mail, they may have plans already in place for us to use. I will talk to them about whether they have anything we can use.

Vic: would like to make a decision at the March meeting about this - we would like to have it as open as possible but with some protection.

Bob B: would to ask that an electronic copy of the draft standard be available in this vehicle so people who want it can get it. Should anyone need assistance in getting to any of these proposed services we stand ready to help.

Dave B: explain the bottom goal under FH PHY that says issue list entered next meeting.

Bob B: by going around some things several times we think we now know what we are discussing, and may be almost ready to reduce things to issues.

Dave B: you have no report on issues discussed this meeting in this report. I have no way to understand the details of what is going on in the PHY group without this log process. By our operating rules you can't put any words into the standard without going through the issues list process. If you produce a PHY without this history of how you made your decisions it will not be accepted because you can't justify the development process. It is a very serious concern that you should start using the process soon before the history is lost.

Bob B: there is some understanding of the urgency of that request.

Vic: what about IR? There were three sub-subgroups originally formed for PHY development.

Bob B: I am not aware of that activity.

Tom Baumgartner: talked to Larry on Monday and he quite correctly said when you make submissions there will be discussion. So a subgroup of the PHY subgroup will hold a meeting before the March meeting.

**10.3 Joint MAC/PHY, by Vic Hayes**

Heard 3/01 and 93/07 presentations.

**11. Unfinished Business**

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

**11.2 Recap of Document Distribution:** All documents on the document list can be circulated.

**11.3 Next Meeting**

(1) Objectives for next meeting (Baltimore, March 8 - 12, 1993), as per by subgroup reports

(2) Last Mailing Date: Feb. 18, 1993

**11.4 Other Intermediate Meetings:**

IR PHY subgroup, Monday March 8, 8:30 AM

**11.5 Confirmation of May 1993, Meeting:** May 10-13

**11.6 Other intermediate meetings:**

September 20-23. invitation from LXE, so it will be somewhere in the Atlanta area.

**11.7 Draft Standard (François Simon)**

Recap: looked in the MAC group for change requirements to the current text. Does anyone here have any changes requested to current text [general consensus is no]. Distribution and formatting have been discussed already. When part of a chapter changes you will get a new copy of that chapter.

**12. New Business: none**

**13. Closure-** meeting adjourned at 3:30 PM, with thanks to the hosts, Xircom.

## Appendix 1 Attendance list

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## Appendix 1 Attendance list

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Appendix 1  
Attendance list

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## Appendix 2

## Tentative Meeting Schedule

Date	Month	Year	Place	Type	Location	Host
08-12	March	1993	Baltimore, MD	Plenary	Omni, inner harbour	
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	Minneapolis, MN	Plenary	Radisson South	
TBD	Sept	1994	TBD	Inter	TBD	Open
07-11	Nov	1994	Incline Village, NV	Plenary	Hyatt Regency, Lake Tahoe	
TBD	Jan	1995	TBD	Inter		Open
TBD	Mar	1995	TBD	Plenary		
TBD	May	1995	TBD	Inter		Open
TBD	July	1995	TBD	Plenary		
TBD	Sept	1995	TBD	Inter		Open
TBD	Nov	1995	TBD	Plenary		

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

## Appendix 3

## Document list

#92/140	Draft standard
#93/01	Extension of the MAC/PHY Simulation Template (Lary van der Jagt, KII)
#93/02	Registration Scenarios for Radio MAC Protocol (Frederic Bauchot, IBM France)
#93/03	Ad-hoc Networking (Frederic Bauchot, IBM France)
#93/04	Comments on IEEE P.802.11-92/127r - Draft Proposal for a FHSS PHY Standard (François Le Maut, IBM France)
#93/05	Comparison between 3 channel FDMA and CDMA DSSS (Jan Boer and Rajeev Krishnamoorthy, NCR)
#93/06	Radio air interface channel modulation parameters (Chan Rypinski, Luce, Inc.)
#93/07	Federal Wireless Users Forum, establishment & mission (Leon S. Scaldeferi, FWUF)
#93/08	Wireless Networks security (Whitfield Diffie, Sun)
#93/09	Distribution services transactions (Dave Bagby, Sun)
#93/10	Time bounded services applied to secure services (Leon S. Scaldeferi, FWUF)
#93/11	FHSS proposal (Bill Huhn, Motorola)
#93/12	Liaison Report from T1P1 (Rifaat Dayem, Altamont Research)

## Document number assignments

#93/13	MAC interaction with a Frequency Hopping PHY (Phil Belanger, Xircom)
#93/14	Tentative Minutes of the IEEE P802.11 Working Group, Interim January 1993, Agoura Hills, CA
#93/15	Tentative MAC/PHY Joint meeting minutes
#93/16	Tentative MAC minutes
#93/17	Tentative PHY minutes
#93/18	Tentative Agenda for the March meeting of the IEEE P802.11 Working Group
#93/19	Tentative Agenda for an interim meeting of the PHY-IR group, Monday AM, March 8, 1993

