

Tentative Minutes of the ad-hoc on WLAN Requirements

Chapel Hill, NC
January 14&15, 1992

Tuesday, January 14, 1992,

8:30 am - 12 noon.

The meeting was called to order at 8:33 AM, by Vic Hayes. Vic announced that Ken Biba has the flu and apologized for not being able to convene the meeting. As none of the participants volunteered to convene the meeting, Vic assumed the convenor's role. Dick Allen kept notes and Larry van der Jagt recorded changes to the requirements document.

Relevant documents:

92-1 is the Requirements document, prepared by Ken Biba

92-3 is Comments from Mr. Kellett

92-8 is Comments from Mr. Flatman

92-9 is Comments from Mr. Black

92-15 is Comments from Mr. Diepstraten

Discussion on document 92-3

Vic Hayes summarized doc 92-3 for the author. Mr. Kellett added hospital applications (e.g., paging) but gave no numeric details. The voice application should be voicemail, not interactive voice.

Bob Crowder: There are plenty of industrial applications where you have to have voice. Greg Hopkins: The requirements document on office talks about interactive voice. Dick Allen: We have heard some expression of desire for interactive voice although some have said that if it adds delay or cost we should leave it out.

Vic Hayes, quoting Mr. Kellett: the range of requirements is very broad. Some will never arise because the cost/performance is unacceptable. Larry van der Jagt: We agree and our work will take care of this. It is essential that we give realistic market potential analysis. Vic Hayes: Ken originally put in market data then took it out because it did not change anything on the analysis.

Discussion on document 92-8

Vic Hayes notes that Document 92-8 from Alan Flatman addresses Document 91-108. he wants to add two applications to retail: Plant/facility management and PC Products on the shop floor (requirement is the same as for office).

The number of terminals for UK and European supermarkets up to 10-30 or more. The requirements document shows 20. Wim Diepstraten felt that the figures should again be increased. He proposes to use 50 terminals for discount and 75 for supermarket checkout.

Chan Rypinski questions if it is common to download to all terminals. Bob Crowder affirms because Ken recommends 802.1-like download. Larry van der Jagt explains that the calculation tells that using Multicast allows you to use 68 kbit/s. Vic Hayes thinks that if we don't use multicast protocols we need over 4 Mbit/s. However, if we do, we increase performance. Dick Allen points out that this is similar to the classroom environment.

Vic Hayes notes that 92-8 says we should include credit card verification in all our terms. Ask Alan for figures. Larry van der Jagt proposes to ask Alan to read the new section.

Vic Hayes agrees to send a response to Messrs Kellett and Flatman, asking to provide detailed data.

Discussion on document 92-9

Simon Black: 92-9: I commented on 108 so this is probably included. [Simon goes through his comments briefly.] the meeting section is expanded. Added considerable text and re-categorization. 1. Conference; 2. Structured meetings (business and professional); 3. Spontaneous (workgroups). He questions whether any of the network operating systems is using LLC type 2 so the MAC service requirements could be relaxed. Dale Buchholz confirms that LAN Manager uses LLC Type 2.

On the convenor's question whether all comments have been taken care of, Simon Black responds "Yes".

Discussion on document 92-15

Wim Diepstraten summarizes doc.: 92-15. Latest review of retailers reveals application of electronic shelf labels and electronic scales. Electronic shelf labels have the property of high density with low communication requirements. This is also true for electronic scales. Page 63 of 92-01 should repair the diagram to include European situation with more terminals. Also program load requirement should be 68 kbyte/10 sec. Simon Black agrees that we should include the tightest requirement to be met. That will handle both.

General review of WLAN Requirements document

After some discussion it is agreed to entertain input from the PHY subgroup, continue discussion on the status of the document and then go in a page by page review.

PHY group

Larry van der Jagt reported that Ken substantially changed the intent of what the PHY group sent him. Put together a set of characteristics on what you can and can't be confident of from PHY to MAC. The MAC group needs to know that and deal with that. In items 2, 6, 7 and 9 Ken has softened our statement... "so you can't count on that but you really can." We want the MAC designed so that you can't count on it. We need to quantify specific issues if we say the MAC can't work. Quantify numbers to what the MAC group really needs. Randy (HP) indicated that there were two ways to define this: One is to drive from the top and the other is to drive from the bottom.

Dick Allen suggested to put some numbers into it. It's not 0% and it's not 100%. Bob Crowder proposed to put a range of numbers.

Chan Rypinski indicated that there are two classes: Peer to peer and Access point. In peer to peer in open office designs an experiment where Ken's criteria succeed or fail. Only criteria is where in the office cubicles. An access point it is still true but the degree is different. What is the involvement of the MAC? If the MAC uses redundancy it's a different situation. Distance isn't the biggest variable. The biggest variable is the furniture. What I said is true of the first transmission. If you had a handshake, the probability is good. Randy suggested that the MAC group needs to assume something about the PHY.

Bob Crowder thought we need to go into the MAC group and do sequences and ask you for numbers. However, Dick Allen thought that we had to go from the question: what are the underlying characteristics of the PHY? Bob proposed to revise and use the PHY text from the previous meeting.

Chan Rypinski moved that we delete the statements added to the statement of the PHY group in 2, 6, 7 and 9, i.e. the last two sentences of 2, the last sentence of 6, 9 and 7 and delete "universal" from 9. Larry van der Jagt Second.

Richard Lee: Point of order--This is a draft document. What is the procedure to modify it?

Vic Hayes explained that the idea is to send it out for letter ballot shortly. The hope is to have a letter ballot approved document for the next meeting. Dale Buchholz was now confused, he thought that this is supposed to be a living document. How can you have that if you vote on it?

Vic Hayes proposed to discuss the procedure later. Dave Bagby disagreed to discuss it later. It's better to see where you are headed. At this point the meeting took a break.

On resuming, Vic Hayes took the floor to start discussion on:

Status of the document

Vic Hayes: What are we going to do with this document? We need this as a template for all our work. Have as a committee document vs an editor's document. To make it a committee document we need a letter ballot. That will result in a number of no votes which we must resolve and then have another vote. 75% would be sufficient but we must try to accommodate the no votes or must explain why we can't. We can make short term changes by votes at meetings and can then put it into a letter ballot. I'd prefer to keep it as long as possible after a letter ballot. The document has appendices on applications. I think applications are more informative. The formal part will be the front--It's based on the PAR. Comments?

Chan Rypinski: It would help me if the scope were narrowed to report on the inputs. i.e., call it User Requirements. Not all requirements for WLAN. When we go beyond the appendices, the only safe thing is the PAR and past motions. I don't care to have things we've decided be reworded. We can list everything we have decided. I prefer not to mix too many subjects. It's bound to be argumentative and I doubt we can close in the next hour.

Simon: What does the letter ballot really gain us? Why not a formal vote in plenary session? It seems to make the management of the document more difficult. Vic Hayes: It exposes the contents to the full membership. It gives all the time to review at his desk rather than on the fly. It raises it to 802.11 document.

Bob Crowder: if I interpret what Don Loughrey said at the last meeting, it's almost essential that we have a letter ballot. Vic Hayes: The way Don has conducted things when he chaired 802.3, we couldn't have MAC and PHY working groups going without a 1-2 page requirements document. Somebody agreed that it is more than PR. It's real progress. It gives some weight to a set of requirements. It changes from a Ken Biba document to a committee document. It may be inaccurate in some areas but it is something we can look to as progress.

Simon: The point I was making is if there are advantages to a letter ballot then we should do it. Otherwise, it's a waste of time. I agree that there are real advantages.

Vic Hayes indicated that we have two options: 1. Have the requirements formal and the appendices informal; or 2. Limit to User Requirements only.

Bob Crowder gave the example of the MA_STATUS indication--I like it but for you guys who want to run under LLC1 (TCP/IP) it may not be such a good thing. Make that a future study issue. I don't think that changes the intent of Ken. I believe it is in the interest of the committee that we go ahead with #1 but can mark "for future study."

Chan Rypinski: MA_RESPONSE is good material. 802.9 put it in a standard. These are respectable subjects. Take it up on its own merits, not "by the way". We are in big trouble if we cover things not relevant to the subject of the document or things that are not settled. My paranoia is that you can take one point in a document once voted upon and reject it by saying it doesn't comply. Evaluate on merits, not technically discard. Once we vote on this with a letter ballot. Those concerned with exclusionary issues, we can't let it go by. Keep out things we haven't agreed upon. Wim Diepstraten thought that certain sections might be more exclusionary than intended to be. So make the document more general. Vic Hayes indicated that we can make our own limitations. This is user requirements only.

Chan Rypinski objected to the way the synthesis of the data was made, he preferred to see a histogram form of the data. He will ask Ken for his Excel spreadsheet and redo it. How binding is this report once

we vote on it? Vic Hayes explained how difficult actual traffic data figures were to obtain by mentioning the efforts of a person in the UK who went out and interviewed 20 companies. They don't know. Data Processing Managers and Manager of Wiring (Facility Manager) were asked and "didn't care."

Chan Rypinski: I have gone into the psychology of this. Facility Managers see this as a threat to themselves. The only solution that we may use is that structured wiring is a lot different. Bob Crowder thought that Chan's approach is to remove all the technical content. I would rather go through it and try to get agreement.

Larry van der Jagt agreed: Sooner or later we have to make some decisions. Those decisions will be kind of binding.

A straw poll was taken--Method 1 (Requirement formal; appendices informal won 22 to 6.

General review of WLAN Requirements document

PHY group concern

Vic Hayes: Returning to Chan's motion: "To delete on page 31 the language in 2, 6 and 7 which have been added to the input to the editor. Keep only the first sentence in each and remove "universally" from 9."

A discussion arose in which one wondered whether some replacement text needed to be included now or later and what the benefit of this specification would be.

Don Heins suggested that editorial change in the future will be marked with change bars.

The vote to delete the language was 15 in favor, 2 opposed and 11 abstentions. The motion carried.

Chan Rypinski wondered whether somebody could move that the section be replaced by the output of the PHY group? No motion was made.

Bob Crowder: I need to change the numbers in the table on page 50. Column 3: Distribution Manufacturing Control. Transfer delay is 5.0 and should be 0.2 and 1 ms. Maximum transfer delay should be 2 and 10 ms.

Wim Diepstraten drew the attention to Page 1 where it states that this is a "living document." There are sections of the document "to be supplied." When will they be supplied? I think there shouldn't be any left out.

Chan Rypinski: Strike the sentence. Say that the document is subject to periodic revision at plenary meetings of 802.11. Vic Hayes stated his vision for the document is: 1. Promote to a 802.11 document through letter ballot. (The rule says 75% of those voting yes or no is OK but we must try to accommodate the viewpoints of the "NO" votes. We repeat the vote until we have the 75%.; Then 2. Update by plenary meeting working group decisions. Changes need 75% of those voting at that meeting.

So the replacement sentence would be: "This document is subject to periodic revision at plenary meetings of 802.11". Followed by: "These requirements will be used as a non-binding guide to evaluate subsequent development of wireless LAN MAC and PHY standards". These two sentences were adopted by consensus.

Dick Allen asks if the letter ballot result will be in before the next plenary. Vic Hayes plans to get it out quickly with a one month deadline.

Bob Rosenbaum proposes to add a table of contents and a revision history. This is accepted.

Speed

The use of vehicular speed on page 2 is inconsistent with page 13. Vic Hayes notes the PAR says vehicular. Chan Rypinski says that this is a non-trivial matter. In some scales it is doable in others not. Stations which interoperate in both BSA and ESA shall be defined if feasible. I think we should strike "if feasible."

Larry van der Jagt objects that we are fine tuning the PAR. The danger is that we keep debating on an assumption we have had debates on for six months.

Operation in both ESA and BSA

Dale Buchholz asks if this is to mean that all stations can operate in BSA and ESA or some will and some won't. Chan Rypinski believes that we must define the situation. Later we find out if it is compulsory or optional. If you do comply you must do it in a standard way. It must be defined. We have yet to define compliance.

Randy Haagens would hate to see this document mean we **MUST** support peer to peer without central control. If that's what we mean to say.... François Simon: This refers to the definition in the standard, not the station. Chan Rypinski: A standard which permitted radically different implementations would garner little support.

Dale Buchholz: The statement is confusing as written. If the goal is to make one station that plays in both, say it. Dave Bagby: We've covered this in the past. The intent is I can buy one unit and it works in either environment. François Simon: That statement is applied to the definition. It says that the standard shall provide protocols for both.

A long discussion ensued with advocates for: Interoperability in both BSA and ESA shall be defined; access point operation only permitted: Systems that operate through infrastructure and do not support peer to peer are practical market segments. The standard should allow systems that do not support peer to peer. with the conclusion to have the last item read: "operability in both BSA and ESA shall be defined."

We will report this to the plenary meeting tomorrow and make some decisions. The requirements meeting adjourned with the agreement to ask more time from the plenary meeting.

Wednesday, January 15, 1992,

10:30 am - 12:30 noon.

Ken Biba leading at 1030.

Ken requested that editorial comments be given to him in a marked-up form. Larry van der Jagt continues to make the master copy for the updates.

François Simon proposes to add parameter to list operating hours e.g. time between battery recharge. Ken Biba tries a term "Session duration". Dave Bagby asks if we are we trying to add battery time to the specification. Ken Biba answers No, he is just trying to justify whether that would provide guidance to power drain

Bob Crowder thought that there was a sense of two MAC forms of operation.

As concerned as Dave Bagby is with battery things, he would like to see when we get all the applications in the back part of the document we have information there but I wouldn't like to see the standard say what the battery life is. Dave Bantz wanders if it is not battery life alone that makes it interesting. A credit card verification might be very short. You don't want a lot of setup overhead.

From our experience in warehousing and shop floor applications with several hundred terminals and 8 hour operation they are going to be very interested.

Ken Biba: I hear that it would be a useful parameter. Barring any major objection it sounds like a useful thing to add. I solicit input. Lacking that, I will pick a number and we can change it.

Ken Biba: I suggest that we add a text to say that many of these modes of operation require 8 hours. Bob Crowder: Many of these industrial applications require months or weeks. Dave Bagby: It is useful information but it doesn't tell you about battery information.

Ken Biba: Does there need to be additional information relating to power drain. Dick Allen remarked that in that case you need also tx /rx duty cycle. Bob Crowder: There are plenty of studies that indicate that time of years is the requirement.

Walt Johnson: How long to change the battery isn't useful information. Ken Biba agree and proposes: What is the minimum battery changing time acceptable to the application.

Dave Bagby: The battery changing time depends on lots of other equipment not just the MAC. The duty cycles are important. The battery number doesn't tell us anything for this committee. Bob Crowder: I disagree. Many people design equipment using that information. Orest Storoshchuk: Dave is trying to decouple this. The rest of the equipment influences this. Maybe you say that the radio portion should consume no more than..

Ken Biba: I'm comfortable that we add on a tx/rx and we add text regarding power drain is important. If you have real data on batteries submit it to the committee

A lengthy discussion of sec 1.5 Conformance was held and on whether the PAR is too constraining. Unfortunately there are no notes on the details and conclusions.

The meeting adjourned.