Functional Requirements Subgroup Minutes
Tuesday AM, July 7 1992

In the absence of chairman Dave Bagby, the meeting was called to order by Vic Hayes at 8:30 AM. Carolyn Heide secretary. Vic made some business announcements: IVD presentation tonight at 8 PM; how many copies of the first and second mailing are needed by attendees - Vic brought some copies and people pick them up as needed; Please sign attendence book wth your initials - not a cross because that means you were *not* here. Sign for Tuesday AM now. A copy of the attendence list will be handed out Thursday, so please don't hold up the list reading it!

Objectives: to ratify the base document and resolve new issues.

Agenda:

1. identify open issues;
2. address each of the open issues;
3. decide acceptance of Functional Requirements document 92/57.

Discussion:

Wim Diepstraten: are you considering changing the current Functional Requirements document?

Vic Hayes: if required.

Bob Crowder: has a comment on the document. Mainly there is an implication that this group must do security work beyond that of 802.10.

Vic: is there an issue about this in the list?

Bob C.: don't know, but the Functional Requirements is the controlling document here. Do we have to read the entire list with respect to the Functional Requirements document? This fits into agenda item 3.

Vic: you should find an open issue on the point you want to make.

Bob C.: this is a technical comment on whether this document should have any standing.

Vic: but we agreed to work by the issue process.

Bob C.: ok, then my issue is "is the Functional Requirements document a useful document in this group?".

Francois Simon: there are isues concerning security but none exactly address Bob's concern. The issues are 6.1, 6.2 and 6.3.

Bob C.: I do not beleive that this commitee has decided that there must be security work beyond that done in 802.10. Personally I don't beleive that we should.

Larry van der Jagt: does issue 6.1 address your concern? [sec. note: issue 6.1 = "What is the support requirement for: (a) security; (b) authentication; (c) registration; and (d) privacy?"]

Bob C.: I don't want to accept the Functional Requirements document with that statement - the last sentence on page 7.

Larry: you want to discuss issue 6.1?

Bob C.: no, I want to discuss the Functional Requirements document. This is not yet a committee document. This is a comment about agenda item 3, it is not an issue.

Francois: what about the third paragraph in the Functional Requirements document - does it answer your question?

Bob C.: the last item of security is my concern. The last item on page 7 is not the position of this commitee. [sec. note: this paragraph reads "Additional mechanisms beyond 802.10 shall be provided to address security issues unique to 802.11"]

<u>Jim Schuessler:</u> this may not be the right time to discuss this problem Bob has. But I feel that item doesn't force us to do anything. It says we will if there are unique requirements for 802.11.

<u>Bob C.:</u> it can be interpreted to say we should charter a security group right now. If that was not the intention it should say "may" instead of "shall" in that sentence.

<u>Bob Buaas:</u> argues - the issue here is whether a product is compliant with the ultimate standard. If the word becomes may, then a product may elect not to do security measures specified and still be compliant. If we do decide any measures beyond 802.10 are necessary then we ought to provide them - we must insist on compliance.

<u>Jim:</u> agrees with Bob Buaas.

<u>Bob C:</u> unique security requirements beyond 802.10 have not been idenitfied. This is not a conformance document, but a statement of the intention of what the commitee will work on, and in that context the word "shall" is wrong. If this is the pix performa the document is not appropriately named.

<u>Bob B.:</u> there is consensus that security beyond 802.10 will required by virtue of the fact that multi-corporate data will be put on radio. In order for products to be conformant the supplier will have to demonstrate conformance with those requirements. The wording in the document is approprate. Leave this as an issue and vote on the document as it stands. If later there is strength to change it, then that's what the issue process is about.

<u>Jim:</u> Bob C. is assuming there is no requirement beyond 802.10 and we don't know that yet.

<u>Bob C.:</u> we have not identified that yet and we shouldn't have a requirement for something undemonstrated yet.

<u>Jim:</u> this statement says in case there are we must handle them.

<u>Bob C.:</u> this is not a conformance document. That will be handled by a different document. We have singled out and given special weight to a requirement of a small group of companies. The requirement will not be that severe.

<u>Jim:</u> pro - the assumption that the security requirement is nothing unique to 802.11 beyond 802.10 is not yet valid. We don't know. This statement covers possiblitlities.

<u>Bob Rosenbaum:</u> con - confusing Functional Requirements with standard conformance is a mistake. By changing the text we are not requiring one way or the other. This would leave things more open to the committee to make the decision as they see fit. That would leave options open - "may" leaves options open, gives committee flexabililty to determine what requirements exist, but identifies they might be there.

<u>Francois:</u> the key word is not "shall" but "will address" - "shall be provided to support" would have been different. We must make sure that this issue is not dropped through a crack. Pro - because it says it will be addressed by the committe.

<u>Payne Freret:</u> suggests alternate wording - "shall be provided as necessary".

<u>Jonathon Cheah:</u> con - good point by Bob - security is a tricky issue because most radio networks may not need more than 802.10. There are networks that require security issues, but when you raise published algorithms you open youreself up to another dimension of authorization - NSA and Commerce Dept. export issues. Another regulation avenue is opened up. If what is provided by 802.10 is not sufficient, then we may require vendors to supply other means, but it should not be a "shall" option. As a low cost consumer product you don't want to add a defense level security protection. If there is some requirement beyond 802.10 we may require some hooks to a crypto-engine, but "shall be" is too strong. We have not ascertained that 802.10 is not sufficient and additional security may increase regulatory body complexity.

Larry: what's going on here is the Functional Requirements document is not really a functional requirements document. It details resolved issues. Line items match up to open issues - like security and issue 6.1. We are not actually talking about a functional requirements document - this is a list of things we have decided we are going to support. If we passed this document we would close issues. This document is not really votable. We are disucssing 6.1 pros and cons now, not the Functional Requirements document. I don't understand the role of this document - it has been made obsolete by the issues list.

Vic: maybe you are right.

Bob B.: to Jonathon - you're right about export difficulty, but not other aspects. Using public key crypto for authentication is freely exportable. Private key options such as DES are controlled. There is a mechanism in the Dept. of Commerce, Dept of State rules for export of security technology. As we discover our need we can address this at the same time. This is no more difficult than other issues.

Bob C.: in my opinion this is not the start of a conformance document, so "shall"s are not appropriate. This is a strong con argument. It is normal in 802 that when you have a concern that impinges on another group you go to the other group - this gives them a chance to agree to modify, or tell you that they can support your concern. Don't spilt off little pieces of other people's jobs.

Vic: that is opposite to your argument.

Bob C: this group does not have the charter to write a new security standard.

Vic: but we do have an obligation if we identify a need to talk to the other body.

Bob C.: then we should say that we will conduct liaison to the other body if needed.

Francois: the "address" word answers this concern. I agree with Bob - but the words say what Bob wants already.

Bob C: it says the mechanisms shall be provided. This is written to bias the committee to provide their own security. Vendors have influenced this toward their own desires.

Bob R: agrees with Bob C.

Francois: isn't the mechanism to handle this to talk to 802.10?

Payne: what is the proposal to handle unique security issues?

Bob C.: the mechanism is: read the 802.10 standard; Attempt to carefully frame in their terms what you felt they can't resolve; Bring to this committee to get concesus; Go present at their committe that we have un-addressed issues; then their chairman should ask for a liason relationship to our committee to handle it. It puts the burden on us.

Vic: show of hands - who would like to change "shall" to "may":

for - 24; against - 10; abstain - 12; didn't vote - 4.

There is majority to change it.

Jonathon: then we should change it and carry on.

Vic: objections? (no one speaks up) It will be added to the issues and the change will be made since there are no objections. How will it be added?

Francois: issues cannot be closed in the same meeting they are opened.

Larry: add the pros and cons to issues 6.1 and leave it open.

Francois: I can add a new issue. I don't think this was the inetent of 6.1. 6.1 is more specific. A new issue can be added for it, 6.4, but it can't be closed this meeting.

Bob C.: we can't vote on this document until this issue is closed.

Bob B.: the issue is seperate from the document. We can vote on it - we have to start somewhere. The proposal is to accept the document as a *working* document. It will be changed as issues are raised and closed. It is a starting point.

Larry: what this document is trying to do is say which issues are closed. Here's the issues that we have decided - these are now functional requirements. It may not

match closed issues exactly, but it is close. If we vote on this document and accept it then all issues addressed in it are closed.

Payne: a sentence that says "may" doesn't belongs in any functional requirements document.

Bob B: a lot of sentences will be deleted. Larry, my sense of the Leiden meeting meeting was that we are producing a draft with our best sense of where we are going, it is a beginning point - a living document.

Larry: the document would serve the best purpose by listing things we have settled.

Bob B: but we haven't done that in this document.

Jonathon: we have the same goal we are proposing differnet methods. The issues list and Functional Requirements document are both good documents. The list is the place for open issues. Both documents are living, the list allows tracking of arguments - when an issue is closed, it moves to the Functional Requirements document. The Functional Requirements document accumulates all requriements we have spent so much time deciding. Take all open issues out of the Functional Requirements document and leave only closed issues in it - then it is really a Functional Requirements document. The two documents go hand in hand, until the four year limit expires.

Vic: this plays back to the agenda propsed. The intent was to go through the document and identfy open issues.

John McKown: the Functional Requirements document was created just prior to the issue list. Now they must be reconciled. Agrees with Jonathon.

Larry: the Functional Requirements document closes some issues. For instance 18.1 or 18.2.

Vic: let's go back to Functional Requirements document (92/57) and see which items have open issues. Page 3: there are issues on CF defintion - issue 10.1

Larry: 10.1 is closed by this definition or this definition must come out of the document.

Wim: in Leiden we had agreement on the contents of the document. We understood it was not complete and that there would be issues outstanding against the document. The issue list was generated without verifying whether the issues were resolved by the Functional Requirements document. We should look at this document as a list of resolved issues. Also, the issue process would in the future be used to adapt this document. Agrees with Larry that this document is a list of resolved issues.

Vic: however there are no pros and cons for these items in the Functional Requirements document.

Francois: if we close an issue like 10.1 there are no pros and cons listed - we can close these without argument. These issues have been defined in a document we have agreed with, so they are closed.

Wim: it was just people throwing out ideas in Leiden, we didn't check for the status against documents.

Larry: an ad-hoc group when away and did some work and we are trying to decide what to do with that work.

Jonathon: let's see how to resolve this. Like we started - paragraph by paragraph, if there is a question remove it and make an issue. Then we have a condensed, closed issues document. When issues are closed we re-insert them.

Wim: strongly disagrees. We should start closing the issues that are closed by the Functional Requirements document now. We can remove some open ones, but use the document to close issues if possible. Leaving no open things in the Functional Requirements document could wind up with an empty document.

Larry: I think the document will be suprisingly full - we can close issues from what is in the document.

Wim: closing issues - fine. But don't remove open ones.

Vic: the issues process has been agreed upon - to delete issues from the list or close them there must be arguments. A closed issue without arguments can be reopened too easily.

Larry: if these are functional requirements then we better be able to agree they are closed. They can't be requirments if they are open issues.

Bob B.: the procedure has a future implication that if we remove open issues from the document then the item doesn't live in the Functional Requirements document. In the furture if we open an issue we may have to take things out of the Functional Requirements document on a dynamic basis. If open issues live in the list and closed ones in the Functional Requirements document then we will have to take things out of the Functional Requirements document when new issues arise. Anyone can open an issue and cause things to be removed from the Functional Requirements document.

Jonathon: institute a policy statement - if in the Functional Requirements document a then a policy is required to remove.

Francois: the argument to close can be that it is in the Functional Requirements document. That's good enough.

Vic: the real issue, now I see it - the issue may be there to help develop not to clarify the definiton (for instance CF and issue 10.1). So an issue about this is ok - it does not affect the definiton, only the implementation.

Bob C.: aggrees with Larry - pick the things we have consensus on and now have a document we can vote on - nothing is in the Functional Requirements document that isn't agreed on.

John: has changed his mind. The intent of the issues method includes changing document wording. One can always open an issue that wording be changed. So if the Functional Requirements document is completely composed of closed issues, the issues procedure could be used - you could purge the Functional Requirements document of language by opening issues that change the document. The procedure was intended to handle everything through issues - including wording changes.

Vic: agrees.

Motion #1:	**Go through the Functional Requirements document item by item and vote whether it shall be left in the Functional Requirements document.**

Moved by: Bob Buass
Seconded by: Bob Crowder

Motion Discussion:

John: if you take it out of the Functional Requirements it must be listed as an open issue. If you leave it in it must be closed.

Yong Wan Yi: we are wasting a lot of time here. Agrument - we may strike out important issues by vote of people who don't know anything about them. Special issues should be discussed in the subgroups or ad-hoc. MAC issues could get struck out by un-knowledgeable people. Let the experts decide. If the subgroup cannot resove, bring it up in plenary, but otherwise it wastes the large group's time.

Vic: item by item can take a long time.

Larry: we are not what we used to be. Let's try again.

Jonathon: call the question. seconded by Larry.

Vote to call the question: (46, 0, 5)

Approved: 31   Opposed: 4   Abstain: 14   *Motion #1 passes*

Larry: procedure for approval?
Vic: 2/3 of the yes/no votes. Abstains don't count.

Vote on section "Definitions" (33, 0, 14) - *section accepted*

Vote on section "Externally Imposed Requirements" (29, 0, 19) - *section accepted*

Vote on section "General Requirements" gets interrupted by ...

Discussion:
Bob Rosenbaum: can we have discussion pre-vote?
Bob Buaas: let's vote, and discuss the no's. My motion was to vote only.
Larry van der Jagt: there are some substansive things in this section. A none line by line vote is not useful. There are somethings poeple will agree to without knowledge.
Bob B.: if Larry has an issue with one of the items in the section, then make an issue.
Larry: this section is substance, not obvious like the other sections. We must understand which issue we are closing by accepting these. Line by line would help.
John McKown: that's going backwards. The issues should be addressed as issues not Functional Requirements document lines.
Larry: there have been months of negotiaton to get here.
Vic Hayes: we moved to vote item by item.
Larry: we don't have an association to the issues list - let's get that cross reference so we understand what we're closing by voting on these items. If we do it broadly we don't understand what we're doing.
Bob B.: let's see how quickly we can get through this to see what is contentious.
Richard Ely: if an item is voted in here and we later find it can't be met. What happens?
Vic: we have to go back and vote it out later.
Chandos Rypinski: possible but not easy.

Vote on paragraphs in section "General Requirements"
    paragraph 1 "The primary service ..." (23, 0, 19) - *paragraph accepted*
    paragraph 2 "Continuity of service ..." (14, 3, 30) - *paragraph accepted*
    paragraph 3 "The MAC must accomodate ..." (19, 8, 18) - *paragraph accepted*

Break at 10:10 until 10:30

    paragraph 4 "The 802.11 MAC and PHY ..." (8, 4, 12) - *paragraph accepted*
    paragraph 5 "Any function or service ..." (15, 0, 9) - *paragraph accepted*
    paragraph 6 "802.11 will support multipcast ..." (18, 2, 9) - *paragraph accepted*
    paragraph 7 "The standard will support ..." (20, 1, 10) - *paragraph accepted*

Vote on section "Data Service Types" (17, 2, 12) - *section accepted*

Vote on section "Coordination Functions" (8, 7, 19) - *section rejected*
    Vote on paragraphs in this section :
        paragraph 1 "All 802.11 implementations ..." (24, 0, 14) - *paragraph accepted*
        paragraph 2 "There will be a method ..." (14, 3, 23) - *paragraph accepted*
        paragraph 3 "A single MAC shall ..." (22, 4, 13) - *paragraph accepted*
        paragraph 4 "There shall be mechanisms ..." (22, 2, 15) - *paragraph accepted*

    Discussion:
    Jonathon Cheah: dilema - section deleted but all items kept in - we must create a new section?
    Bob Crowder: I think we are finding evidence that when we ignore the abstains we bias the vote.

Nathan Tobol: Roberts Rules says 2/3 of yes/no votes.

Bob C.: we can ignore Roberts Rules here.

Vic Hayes: we discussed this before voting - it was made clear.

Tim Kwok: section has other issues that should be in it. Is this why the section is rejected even though the items were acceptable?

Vic: issues (ie on the issue list) are there to specify the coordination function in the future, but these are the overal guide.

John McKown: the vote on the items split the section no voters, that is why this happened.

Vote on paragraphs in section"MAC/PHY Interface"

    paragraph 1 "A single MAC will be used ..." (35, 0, 10) - *paragraph accepted*

    paragraph 2 "A single MAC/PHY interface ..." (30, 2, 12). - *paragraph accepted*

    paragraph 3 "If the MAC/PHY interface is exposed ..." (23, 0, 14) - *paragraph accepted*

Vote on paragraphs in section"Security"

    paragraph 1 "The standard shall support registration services." (23, 2, 17) - *paragraph accepted*

    paragraph 2 "The standard shall support authentication services." (18, 2, 21) - *paragraph accepted*

    paragraph 3 "Additional ..." modified with "may" replacing "shall" (15, 10, 20) - *paragraph rejected*

Discussion:

Larry van der Jagt: we can't be quite done - we need to update the issues list according to what we decided here. For instance issue 6.1 - we said there will be registration and authentication. We didn't close the issue. We know what a coordination function is (issue 10.1) because we have a defintion of it.

Jonathon Cheah: we have a definition but we don't know what it is.

Vic Hayes: the issue of 6.1 is what is the requirement - not that there is a requirement.

Jonathon: in 6.1 should have authentication and registration striken, the rest of the issue stands.

Larry: the issue is what is the authentication and what is the registration - and will there be others.

Francois Simon: we need to break this into 4 issues of which 2 are closed. The text says what is the support requirement.

Larry: we have decided there is a requirement for authentication and registration. We need an isssue that says what are they. Security and privacy we still don't know if there is a requirement.

Vic: the issue is still there - we have to fill in the what.

Larry: we don't need to discuss again whether there will be authentication and registration. You are choosing to leave this issue there - I think we should break the issue out and say what will we do for registration and what will we do for authentication. 6.1 becomes do we have requirement for security and privacy.

Vic: to make this issue unambiguous it should be split as Larry described - (1) is there a requirement for security and privacy, and (2) how to specify authentication and registration. Is there any objection? (no one speaks up.) Close 6.1 and note that it has been replaced.

Bob Buaas: as of the last meeting there was a sense that there was a requirement for privacy - let's vote on that so we can close that too.

Bob Rosenbaum: close Functional Requirements document before issues are closed?

Bob B.: relates to the Functional Requirements, not to the issues.

Vic: we ask for submissions to close issues - someone must make a submission to close an issue.

Jonathon: this is not the platform to create issues or close them. This is for going through the list and cleaning it up. We are trying to do to many things at once.

Bob B.: does not agree.

Larry: Bob B. needs to add something to the requirements document.

Jonathon: he can open another issue next meeting if he wants. We have finished with the Functional Requirements document.

Vic: we request input from Bob Buaas if he wishes to close the issue. We must stick to the procedure of submitting contributions and discussing them at next meeting.

Larry: 10.1 can be closed because we have a coordination function definition. Then it needs to re-phrased as "what coordination function will 802.11 use".

Vic: if the question is 'what is' why can't it stand?

Larry: because we have a defintion in the Functional Requirements just approved. You want to flush it out with specfiication. We know what a coordiantion function is, we just don't know which one we are going to use.

Francois: rephrasing is ok: "what CF will be specified in the standard" - any objections? (no one objects.)

Larry: 11.1 [sec note: issue reads "What is the definition of an AP?"]- close it. It is defined in the Functional Requirements document. We can open another issue if we feel this is not a sufficient definition.

Vic: this one will be closed.

Larry: 12.8 [sec note: issue reads "Does a PHY independence layer need to be specify in the MAC?"] - not sure if this can be closed.

Carolyn Heide: no, we have not answered this in the Functional Requirements document.

Larry: 18.1? [sec note: issue reads "Should the MAC work equally well at all PHY data rates?"]

Carolyn: we said all rates will be supported, not how well.

Wim Diepstraten: what are you measureing for this issue? What is "well"?

Steve Chen: it is difficult to define "equally well". Keep this issue open.

Bob Crowder: in a conventional MAC there is turn around time. For a 1 Meg rate that may be short, for 20 Meg the same time may be important. So efficeincy is affected.

Jonathon: I agree, keep it open.

Larry: that's all the issues I can think of.

Vic: we learned from this exercise - because of the procedure, we should address submissions to issues. At the end of the submission propose text for an issue and/or a proposal for open or close. That way we can work more efficiently. I can report to the working group on Thursday that we ran through document 92/57 and accepted all but the last paragraph. We suggest to the full working group that they accept the document. Objections?

KS Natarajan: what about the last paragraph, and what about the section that was rejected as group but not as items?

Vic: we decided that each paragraph by itself was ok, so it can stay as is.

KS: we loose the record of the initial vote.

Vic: chairman's descretion rendered that vote invalid.

Jonathon: propose a policy statement on how to modify the Functional Requirements document, so that we don't have to do this again. From this point on - if this document is acepted by plenary - it requires 75% of voting membership to open any item in that document as an issue, and 75% to add any itme into the document.

Vic: isn't that the procedure we have already?

Jonathon: no - specifically spelled out for the Functional Requirements document so that we know. There is subtle difference here that I am trying make.

Vic: looks up in Roberts Rules - 2/3 of the vote cast by persons that vote, excluding abstentions.

John: isn't it true that the vote required to close is equal to that to open? it says 2/3 not 75%.

Vic: yes, we accepted 2/3.

Jonathon: ok, 2/3 vote required to take things in and out of the Functional Requirements document.

Wim: it is fully covered in the issue resolution process. It also applies to the Functional Requirements document. Question: when we voted on the failing statement, we didn't vote on the original?

Bob B.: we should vote on the text as submitted in the orignal paper. If it gets removed it should be captured as an issue.

Larry: it is an issue, 6.1 (a) or (b) as we just made them.

Jonathon: we can discuss it now, but make submisisons on it.

Bob B.: the spirit of the motion I made earlier was let's vote on it - let's capture the original text exactly and make it an issue if it fails.

Vote on section "Security" paragraph 3 as printed in 92/57 (8, 20, 16) - *paragraph rejected*

Discussion:

Bob Crowder: proposes that the phraseology rejected by the smaller margin be placed into the issue list - neither in the Functional Requirements document. Issue "is there additional work on security that needs to be done in 802.11 in addition to work that is done in 802.10".

Francois Simon: this new issue is opened by Bob Crowder. Are the new secuirty issues opened by Larry?

Larry van der Jagt: I guess so.

Francois: can 15.7 be closed [sec not: issue reads: "What is the common service: aynchronous, or time-bounded?"], because it is answered by the Functional Requirements document service section. Objections? (none) There is no objection to this closure, so it is closed.

Vic: let's hear contributions.

Wim Diepstraten: what does "new" issues mean in your original objectives?

Francois: 92/68 is a list of issues that the committee said could be addressed.

IEEE 802.11-92/68 Additional Functional Requirements Items, by Francois Simon

There was a list of 103 issues. I also looked at the MAC criteria list as requested by the meeting. Also in the original Functional Requirements document there was a handwritten list - so that was about 130 issues total. I went through that list and asked should this be in the Functional Requirements document for each one. This is that list by number and description. I tried to avoid repeating items already in the Functional Requirements document.

Discussion:

Vic Hayes: we should retain this document, maybe we could include it in the Functional Requirements document, as an appendix. It's great that you did it , thank you. It makes a useful index.

Francois: personally, I felt these needed to go into the Functional Requirements document.

Vic: can we change the title to be "issues related to the Functional Requirements" - "additional" is ambiguous.

IEEE 802.11-92/81 Signalling for IEEE 802.9 Cicuit Switched Services, by Sanjay Popli

Has been involved in 802.9 IVD, which converges packet services and time bounded services. The PHY supports 4 and 20 mb/sec. Partions these bandwidths into sections between isochronous data and packet data.

In isochronous you need call control protocol. There have been discussions about the protocols currently in use and being proposed for isochronous - FDDI2 or 802.9. Also talk of other ATM service and broadband ISM proposals from AT&T and from Belcor extending Q.931 for ISDN extended - the only standard is Q.931 that provides a good start for standardizing.

In 802.9 Sanjay is proposing the PHY level use D channel - 16 or 64 clear channel - available for setting up and clearing calls on the band C - layer 2 protocol. Does error and flow control, standard ISDN LAPB.

At layer 3, Q.931 basic and primary rate - up to 2 meg/sec. In 802.9 there is up to 20 meg, so we have to extend Q.931 to support those needs.

At layer 3, Q.931 - establish, maintain and terminate connections between ISDN entities. We have modified it. Does routing, relaying, connection control, error detection and correction, congestion control and restart. For synchronous (standard Q.931) nodes, you have message and information units within messages. There is n-block sending and overlap sending (information for setup either in the setup message or sent after the setup message), from the user side. The network side acknowledges and then gives a connect which the user-side acknowledges. After this data may be transfered. For tear down, the disconnect comes from the user side or network side. A disconnect, release, then release complete message transfer tears down the call.

Adpatation points: for tx between the AU and DTE a low cost is required at the DTE side. The flexablility for Q.931 is over built for 802.9. Identified these setup and teardown (point to point switched call) and removed them. A minium set was then produced for 802.9 setup and tear down messages.

Each message in Q.931 has information fields. Each field is called an information element. It was ISDN support initially, so only went to 2 meg. So extensions were needed for isochronous based LANs. Added a bandwidth allocation information element. A multiplier field is used to mulitply the base rate to get bandwidth required. The channel id extention identifies which channel you wish to allocate for a channel.

Concept of a code set - Q.931 defines code set elements. There are sets 6 and 7 available for private newtorks as an escape mechanism for private networks.

Conclusion: Q.931 is a good stepping stone for isochronous LAN networks; identified a subset of messages; provides a easy ISDN interface since is ISDN based.

Just a brief idea given here.

T1S1.5 is the standards group, CCITT 15 group.

Discussion:
Francois Simon: the list of messages seems like Q.933.
Sanjay: there is overlap here. Q.933 is frame relay adaptaion of Q.931. Their messages have more user information messages, but the subset is similar. These are the core messages.
Francois: is this going to be only 802.9?
Sanjay: we are trying to convince T1S1 to extend Q.931 with this. The goals is to be standard in CCITT.

Larry van der Jagt: can you identify the requirements on a MAC and PHY that the transport of these messages might impose. Is this transparent to the MAC and PHY and just nice information for us?

Sanjay: this is independent of PHY.

Larry: time constraints?

Sanjay: yes, this needs to be resolved.

Larry: then in order for us to incorporate this we need more information.

Sanjay: yes, I understand, I was giving you just an idea.

Chandos Rypinski: I saw no referecne to slotted channel applications?

Sanjay: this is in the information element added. There is slot id.

Chan: There are important differences between 802.11 and 802.9 that must be taken into account. Multiplexing the IVD groups that cause two protocols to become 1 - 802.9 does it at the medium. We have problems ther . At least a few of us think that the multiplexing should be done above the MAC to make the signalling rate invisible. The higher layer would never go over 2 meg. The multiplier function has to do with a medium property.

Sanjay: this is just a starting point. Applications like media conferenceing have not been addressed by Q.931. You may want to consider these at 802.11

Chan: Our intial tendancy is to say we have no influence over Q.931 and we have to live with it as it is. Our starting point is live with them as they are for the purpose they have.

Sanjay: we have a little different need. A station subset is being addressed (Chan appreciates that). You don't need the second extention for your needs. This is starting point for 802.9, not part of the draft. There is work by Belcor on Q.931b. People have looked at call control as I have by starting at Q.931 and adding extention elements. Q.933 too - information elements get added to support capabilities - like quality of service - and through type of elements.

Tim Kwok: isochronous circuit switched point to point fixed bandwidth?

Sanjay: yes. Others are looking at changing bandwidth while the call is in progress. That could be part of the extentions.

Francois: is the new element negotiable over the network?

Sanjay: the bandwidth is negotiable. There could be a negotiation exchange between the two end points.

Jim Schuessler: this is an argument for issue15.3 [sec note: issue reads "What protocols above the MAC would drive Time-bounded services?"- suggest that Q.931 extention be that service.

Chan: comfortable with saying Q.931, but extensions are an option that needs to be studied.

Sanjay: yes, agrees with Chan.

Bob Crowder: factories and automation services have time based services that are not addressed by Q.931.

Jonathon Cheah: we have made a clear definition between time bounded and pure isochronous. This should be an element but not the whole.

Chan: this is the telcom subset of time bounded.

Jim: will make text for the issue, not close it yet.

Jonathon: can Jim make the Q.931 specification available to us? This was a nice summary but details of 802.11 pertainent items would be nice. Could you summarize the pertinent sections?

Jim: that's a different issue. The full sections that are relevent are too big.

Larry: summarize those sections.

Jim: any packet based service could support this service.

Larry: that is easy to say, but there is always a 'but so long as'. That's the information we need.

Jim: yes, that's the next step and we need that information.

Sanjay: that's a big task.

Francois: time values are important. The timer in Q.931 - are you using the Q.931 values?

Sanjay: yes.

Simon Black: two issues: timer values need to be 8 khz for voice. This is not synchronous data it is isochronous.

Sanjay: the channel setup is one thing. The actual data is another.

Simon: that's the difficult one.

Bob C.: runs entirely as a network protocol. Layer 3 between the end point and an ISDN swicth?

Sanjay: entirely on LAPD. Signalling time and isochronous data are the two issues. Q.931 specifies the signalling service only.

Vic announced that the proposed ET NPRM reply comments were received just now, around 5 PM copies will be available.

Meeting adjourned at 12:30 PM.