

IEEE 802.11
Wireless Access Method and Physical Layer Specifications

Conformance Testing Discussion Minutes

August 29, 1995

Tuesday Morning Full Group Meeting Minutes

Phil Belanger Temporary Secretary

Sponsor Ballot Mechanics

Vic Hayes (VH) Describes Procedure towards sponsor ballot.

VH believes that it may be challenging to meet the March goal for sponsor ballot.

After confirmation ballot, standard goes to ExCom for sponsor ballot. We could send out a confirmation ballot on 1 DEC, due on 31 DEC (Peter Chadwick points out that Christmas is in that time), then send the sponsor ballot draft out in the middle of January, after the results of the confirmation-ballot are processed at the January meeting.

David Bagby (DB) announces the AMD controller chip PCNet Mobile info is available in rear of room.

Conformance Statement

802.12 only has a PICS proforma. Other conformance-related stuff goes into another document.

Conformance Testing

Peter Chadwick (PC) filling in for Larry Zuckerman. We need to consider:

- Use of external labs to develop test methods.
- Production of documentation
- Production of standard test set for interoperability

Testing Mechanics for FH

- non invasive testing

Documentation Required

- MAC tests
- FH
- DS
- IR

What is offered by the university testing services?

University of New Hampshire

Can they be relied upon to define mechanics of test?

Johnny Zweig (JZ) - Seems too informal.

David Bagby (DB) - May not serve the needs of companies in this group.

Leave it to vendors to work it out.

Some vendors have products. Should work with others to assert interoperability.

Jonathan Cheah (JC) - Agrees with Dave. If you rely on universities, you (vendors) end up spending a lot of time hand holding. Refers to PCI bus. Industry group formed to hash out details. Only way to get interoperability is to sit down with both sets of equipment and try it out. It doesn't work when you put out a nice spec detailing conformance requirements. Proposes a consortium be formed to work out the details by actually trying it. He doesn't think that it is possible to come up with a conformance test suite on paper that will be sufficient to ensure interoperability (learn-by-doing).

Tom Siepe (TS) - Would be nice to have a permanent environment available to test against.

Bob Ohara (RO) - Two different things to accomplish. Demo and provide interoperability as vendors. As a standards group, we must define what is necessary to conform to the standard. It may not even be necessary to be conformant to be interoperable. This group should establish the lower floor. In this group, we don't have the bandwidth to define interoperability. Simpler task to define conformance.

JZ - The way you find out what you need to do to get interoperability. No one should write a conformance spec who hasn't done the dirty work.

Fischer (MF) - I see conformance testing as being more difficult than interoperability testing. Interoperability is simply basic communication. Conformance testing must define and test the boundary conditions. This is a much bigger job than interoperability. It may not even be possible to do conformance testing with the current MAC/PHY. Submission coming.... Should define terms more precisely. He feels that looking only at the top of the MAC and the antenna it might not be possible to ensure conformance (submission 95/190).

JC - Conformance test document should include three items -quality, environmental, interoperability set.

Quality - receiver sensitivity; environmental - temperature range etc;

Interoperability set is a subset of the conformance document. Market place for WLAN is stumbling because there is no guiding light in this area. Without interoperability guidelines, there will be chaos.

RO - Still have to disagree with what MF and JC have said. As a manufacturer, I want to demo interoperability. In this room,(as a standards group) interoperability doesn't fit in the piece of the standard that relates to conformance. It would be remarkably difficult to do a conformance test for scanning for example. Even testing for all occurrences of "Shall"

Anil - Bob's right. Conformance is "Have you done what the standard says?" Interoperability is

RO - Interoperability is a shared fiction

Moyers (WM) - I fear we're all in violent agreement. Vendors are going to rush out and claim conformance. Customers will buy from several vendors. There will be interoperability problems. We better get at the job of defining interop. I suggest that we need help. Maybe we can use some previously published documents. We've got to produce something. It is preordained that 802.11 products will not interoperate. There are too many knobs, dials, etc. Market will be damaged

Stephen Wood (SW) - If we define outside group, it could act more quickly. We should restrict our efforts to defining a conformance document that an outside group could implement. Just focus on the PICS Proforma.

MF - Various settings can be dealt with by establishing profiles for testing.... While I strongly favor getting ahead with the conformance criteria, in my mind it not useful to define a testing criteria that is not sufficient.... A "non invasive" test would have to rely on media errors to test

handling of CRC errors for example. However, there is nothing in the MAC to allow us to generate CRC errors.... This is invasive....

Anil(AS) - we don't need to define that as part of the standard.

MF - We don't have to but this would allow us to have a uniform way to stimulate the boundary conditions in the standard and it would simplify our lives in the next few years.

Dean Kawaguchi (DK) - 3 desires for interoperability test 1. Interop may be less of a test than conformance, 2 it will interoperate with other equipment.

Test lab. What happens when you get the first product there? In the case when you have more than one vendor and interoperability fails - who is wrong? Which one is non conformant? Lab will not be the best thing for the beginning. Maybe after we have compliant devices it will help verify new devices quickly.

DB - Two subjects. Conformance - binary state. You are or are not. Interoperability is a measure of the quality of the standard that we have created. If you don't achieve interoperability, customers assume the standard is bogus. IETF has two different groups implement something from the same document. Standard is not real until those different implementations work together.

RO - MF advocated adding stuff into the standard to provide the necessary hooks in the standard to allow us to test the standard. This is a recursive path...

JZ - The standard will not be damaged by lame implementations. It is the vendors who will suffer if they do not put out reasonable product.

Phil Belanger (PB) - Meaningful interoperability of WLAN products is outside the scope of this group. There are many elements that are not defined by 802.11 that are required for interoperability. We should focus our efforts in this group on the conformance test. We must leave interop testing to an external group.

MF - There is precedent for testing hooks in a standard, we will need such hooks in order to do the interoperability testing we want to do later. It would not create a recursive problem.

TS - We must complete this document. We can't possibly finish the test this week. Whatever consortium or groups are formed should take sufficient notes to feedback to this group deficiencies in the standard.

BREAK -

Don Johnson (DJ) - have been working on ANSI....

PC - Summarizes

- University approach is not popular.
- Interoperability and conformance are two separate things

External interoperability testing may be nice,

but who will fund the development of conformance test documents

exploring the boundary conditions will not be the priority for initial interop tests

once you have the seal of approval for basic interop, why go any further?

- Time scale suggests interoperability is urgent.

Let's get a PICS Proforma put together.

JC - interoperability is a subset of conformance. Conformance dictates...
interoperability is a short term compromise.

Michael Fischer presents paper 95/190

Assertion: the MAC is really all about time. Frame formats are easy to get right and easy to check. Timers and aging and stuff like that is much harder to test. We need to be sure what's going on in the guts of the thing in order to minimize the likelihood of subtle incompatibilities between mostly-interoperable devices

Lots of interaction on the point of defining an exposed interface between the MAC and PHY for the purpose of conformance testing.

Michael asserting it will simplify testing.

Audience saying testing MAC functionality by itself is not meaningful. Only meaningful test is end to end interoperability.

Agenda for remainder of day

VH - reconvene on this after lunch?

DB - Speaks against spending more time in a large group on conformance will not be productive. Suggests that a small group be formed to come up with a straw man that we can review.

MF - We could subdivide the draft and have smaller groups work on separate sections.

Conformance testing discussion will resume Thursday PM in the plenary.

MF - It seems premature to spend time here. Should we defer to another meeting and make progress on it later?