

IEEE Power Over MDI Study Group Meeting Minutes
Sept 30, 1999 – Minster Room, Royal York Hotel, York, UK

Meeting commenced at 8:50 with an introduction by Steve Carlson. Steve discussed a general agenda for the day. Michael McCormack was appointed to take minutes.

Work began on developing the 5 Criteria document for presentation at the November Plenary.

Discussion regarding Broad Market Potential:

IP Telephony was cited as 8.8 million units projected by Lucent

Discussion was postponed by a request from Geoff Thompson to have all attendees introduce themselves, a round of introduction took place.

Discussion returned to Broad Market Potential:

Steve Carlson brought up Industrial Controls as a potential application.

Suggestion made that as MDI Power was rolled out new classes of devices could be created that are not currently feasible.

IP Telephone discussion centered on the displeasure of end users with having separate cables as well as customer expectations that telephones would operate when AC power failed. If customers wanted back-up power with the current powering topology, numerous UPSs would be required at considerable cost..

Relative costs extending power wiring to certain locations in a facility were discussed.

Balance cost was brought up:

Removal of the cost of bringing power to the end station would be a balancing cost.

In a UPS environment, a centralized system UPS would shift cost to a more balanced.

Geoff Thompson explained the historical perspective of the criteria - the original intent was 802's interest to attack centralized computing environments, therefore a prejudice to favor distributed costs and hence the "balanced cost" criteria.

Industrial control systems today supply 24 volts over control wiring, therefore 802.3 can not feasibly enter that market as vendors would be required to provide power remote to devices by some other means.

The multiple vendors support requirement was discussed, Geoff Thompson explained there was canned text and will be filled in with attendance information.

Compatibility Criteria was discussed:

Discussion centered that this was an affirmation statement, the working group would be required to state that the proposal would comply.

Distinct Identity:

802.9 was mentioned – Bob Bell stated that the "f" study group never voted on the specification, therefore there was no 802.9 "duplication."

Unique solutions requirement:

The was discussion that 802.9f was a specification of several choices

Geoff Thompson stated that 802.3 would be interested in a single power system, not in numerous choices.

Easy to find documentation requirement – this will be a separate clause, the only power reference in 802.3, canned text exists.

Economic Feasibility

Installation costs:

System cost must be mentioned – cost of power outlets would be reduced in some places.

Most IP telephony cases will be near an existing location so installation the costs of AC power are not on the table.

In the environment of back up power, installation costs are significantly lowered by providing centralized power. Approximately 50% of PBX systems ship with battery backup systems, therefore it is reasonable to assume Ethernet PBX systems will require the same level of backup. Cost model should not be the cost of a wall wart but the cost of reliable power grid which is the true competition.

Technical Feasibility

Some discussion was made that regarding the various methods that have been put forth.

A general discussion was made about how presentations were made, and what were the operating rules of the committee. Geoff Thompson took the floor to explain 802.3 working rule and the use of the attendance books. Geoff discussed the 802.3 patent requirements, that in general for material to be included in a standard it must be available in "reasonable and non-discriminatory terms." If someone has IP that relates to the standard, they must put a letter on file to the effect that it will be licensed on "reasonable and non-discriminatory" terms.

Proposal was made that the group should begin creating the "5 Criteria" document using a PC connected to the projector. Arlan Anderson was asked to begin editing the "5 Criteria" document on the overhead.

Discussion was mentioned regarding a current limitation of very low leakage for medical installations. Floor discussion explained that this would be an issue to be resolved in the standard.

Discussion regarding the industry interest. The numbers from the Montreal Call for Interest were put forth. The TIA representative mentioned that they were interested in IEEE developing such a standard and would be sending a letter to the IEEE requesting support. A comment was made that 802.11 has expressed an interest as has a second TIA organization. The two TIA organizations were TIA/EIA TR-41.3.4 and TR-41.4. Mention was made that there are current proprietary solutions, and a comment to the effect should be made in the technical feasibility section.

Geoff Thompson proposed text stating that the cost balance has shifted over the years due to reduced cost of silicon, and centralized power would return the balance of functionality vs. the cost of providing power in end stations. Mention was made of the cost of providing power at some end point sites would be balanced against the cost of providing central power.

10:30 - Break

Discussion began regarding compatibility. Proposed that the wording be compatible with 10/100, and cause no damage with 1000. Request that the standard support 1000, with counter discussion to include 1000. Discussion expanded to include "damage to any other equipment", both those in favor and against discussed their views. Final decision for the chair was that this was from an 802 perspective, only reference was to 802 was necessary for the compatibility criteria.

Discussion began on "Distinct Identity", discussion regarding 802.9f determined that reference to 802.9f was necessary. There was general agreement that only one solution would be put forth. Decided that this would be documented as a separate clause. Wording of response was agreed to be further wordsmithed.

Discussion began on "Technical Feasibility." Chair asked for proposed solutions. Discussion ensued about what was necessary to prove "feasibility." Subject of 100 T4 was brought up, the group confirmed that this would be evaluated, but not necessarily supported. Wording of response was agreed to be further wordsmithed.

Discussion began on "Economic Feasibility." Discussion of what a power supply costs were begun. Discussion centered around the fact that power supply technology was mature and well understood. Statements from the floor emphasized the total system cost reduction. Wording of response was agreed to be further wordsmithed.

Mike McCormack was appointed by the chair to edit the 5 Criteria document over lunch to distribute and vote on during the afternoon.

Further discussion of "Economic Feasibility" emphasized the fact that this was an enabling technology for certain classes of devices.

Work began on the Project Authorization Request (PAR.) The group as a whole developed the project scope statement. The only debate centered on what was the proper name for the devices that terminate the power. Geoff Thompson instructed that acronyms were not allowed in the formal PAR.

Group discussion began on the purpose of the projects, wording was agreed to with little debate.

The chair asked for any response regarding patents related to the anticipated technology. There was a general discussion regarding the IEEE patent policy lead by Geoff Thompson. Bob Bell cited a patent related to ITU recommendation I.450 that could be related to the power project. Geoff instructed the chair to mark the PAR patent item to indicate there were possible patent issues.

The remainder of the PAR was filled out without much debate. Arlan Anderson retained the final revision of the PAR.

Motion 1: Move to approve the PAR as recorded. Moved: Bill Quackenbush, Seconded: Bob Bell Technical, Vote - Yes: 36, No: 0, Abstain:2. Motion passed at 12:25

The meeting was adjourned for lunch at approximately 12:30 to reconvene at 14:00, meeting room changed to larger room.

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Meeting was called back to order and the group began to edit the revised 5 Criteria. As the Criteria editor was the secretary, few minutes were captured during the interactive editing process. The cleaned up 5 Criteria document was displayed and numerous minor edits were made. The major item of debate centered around multiple power modes in the scope statement.

Motion 2: Move to approve the 5 Criteria as recorded. Moved: Bob Bell, Seconded: Bill Quackenbush, Technical, Vote - Yes: 36, No: 0, Abstain:0. Motion passed at 14:45

Presentations:

DTE Power via MDI Detection Scheme - Nariman Youseli:

Question: How would you propose removing the loopback? Answer: Several methods are possible, relays would work.

Observation: This would seem to preclude RX/TX pair powering.

Observation: If the filter were a bandpass with DC rejection, it would allow RX/TX pair powering

Observation: Cross talk could present an issue.

Observation: Cross talk would present a distorted echo, this could be discriminated by the receiver.

Question: How could a device enable a loopback without power? Answer: A couple of ways could be envisioned, relays would work.

Question: What about a failure mode – how could you distinguish between a filter and a short. Answer: This could not, further refinement should allow discrimination.
Question: How would you propose removing power when equipment was disconnected? Answer: Link integrity could be monitored, remove power when link pulses are absent.
Observation: It may be desirable to provide power in the absence of data so that the end station could be put to sleep.
Observation: This could be used to power in the absence of data, link integrity is just one criteria to consider when removing power.
Observation: removal of power could be configurable based on link integrity
Observation: Some MIB changes will definitely be necessary.
Observation: There will probably be some minimum power draw necessary to maintain power insertion at the hub /switch.

Risks / Issues for DTE Power - Nick Stapleton and Mike McCormack

Question: Do we need to discuss other (non-802.3) RJ-45 uses? Answer: Probably, we need to at least characterize the effects.

“Bob Smith” Termination - Geoff Thompson

No questions

Proposed DC Power Requirements for Power via MDI - Phil Mollard

No questions

DTE Power over MDI: Constraints in the Solution Space - Arlan Anderson

Question: Is the 1.5 Amp rating per connector or per contact. Answer: Per contact, the total connector rating is not specified.

Observation: The RJ-45 board mount connector represents the most constrained current limitation, it is poorly documented by some vendors, varies greatly.

There was an extended conversation during the question and answer period regarding transformer current limitations and the wire imbalance in the transformer and the cabling. While not directly related to the presentation, Arlan was still on the floor during the discussion.

There was a general discussion regarding what other specifications would apply to the proposed standard. Concern was voiced that IP telephones would require that the power over MDI standard be constrained by the requirements for outside telephone line plant. Steve Carlson noted that UL 508 could apply, which would limit the voltage to 42 VDC. There was no conclusion regarding which safety or testing standards would be required for the proposed standard.

Bob Grow was called by the chair to present a list of possible objectives for the proposed working group. Bob Grow presented a list compiled informally from attendees. Discussion ensued about the possibility of a new connector, consensus was that RJ-45 was preferred, if at all possible. Discussion about CAT-3 cable and requirement to support 2 pair only cable installations, there was no consensus. Item to require preservation of cabling signal transmission characteristics of existing equipment and cabling was added. Added an object to create a standard that was acceptable worldwide. There was a discussion about how to power a device that was already externally powered, added an objective to support powered devices. The group agreed to propose the objectives as a draft set to the November plenary meeting through a procedural vote. Bob Grow was instructed by the chair to print and distribute the set of objectives at the close of the day's meeting. The chair asked the group to review the objectives and come prepared to discuss them on Friday. The meeting was adjourned, Bob Grow supplied copies of the objectives as attendees departed.

October 1, 1999 – Oak Room, Royal York Hotel, York, UK

Meeting was called to session approximately 8:30 by Steve Carlson.

There was considerable discussion on the number of pairs. The debate centered on whether the standard should support powering devices over the data pairs or via four pair installations. Compromise wording was put into the objectives, neither excluding nor requiring support for two pair wiring installations.

Discussion on adding 1BASE-T as a media to consider, there was no objective to support this media added.

Numerous wordsmith questions / statements were made regarding various objectives.

Motion 3: Move to present the draft objectives to 802.3 at the November opening plenary, indicating that a set of Study Group approved objectives will be submitted to 802.3 when the DTE Power via the MDI PAR is considered for approval. Moved: Bob Bell, Seconded: Bob Grow, Technical.

Debate: On the previous date, this was agreed to be a procedural item, requiring only 50% to change later. 802.3 Vice Chair David Law objected, stating that objectives were "about as technical as it gets." Friendly amendment by Geoff Thompson that changed the wording of the motion to make it a procedural motion by not voting the objectives but voting to present the status of the objectives, amendment was accepted.

Motion 3 (revised): Move to present the current state of the objectives in progress to 802.3 at the November opening plenary, indicating that a set of Study Group approved objectives will be submitted to 802.3 when the DTE Power via the MDI PAR is considered for approval. Moved: Bob Bell, Seconded: Bob Grow, Procedural. Passed by acclimation.

Question: Were the PAR and 5 criteria voted and approved?
Answer: Yes.

Motion 4: Move that the 802.3 chair pre-submit the draft PAR and 5 criteria to the 802 exec 30 days prior to the Nov 1999 802 plenary meeting in a motion to approve. Moved: David Law, Second: Norm Finn, Technical: Y: 28, N: 0, A: 0

The chair closed the meeting.

Respectfully submitted

Michael S. McCormack

Summary of votes taken by the IEEE 802.3 DTE Power Via MDI Study Group:

Motion 1: Move to approve the PAR as recorded. Moved: Bill Quackenbush, Seconded: Bob Bell Technical, Vote - Yes: 36, No: 0, Abstain:2. Motion passed at 12:25, September 30, 1999

Motion 2: Move to approve the 5 Criteria as recorded. Moved: Bob Bell, Seconded: Bill Quackenbush , Technical, Vote - Yes: 36, No: 0, Abstain:0. Motion passed at 14:45, September 30, 1999

Motion 3: Move to present the current state of the objectives in progress to 802.3 at the November opening plenary, indicating that a set of Study Group approved objectives will be submitted to 802.3 when the DTE Power via the MDI PAR is considered for approval. Moved: Bob Bell, Seconded: Bob Grow, Procedural. Passed by acclimation 9:30 October 1, 1999

Motion 4: Move that the 802.3 chair pre-submit the draft PAR and 5 criteria to the 802 exec 30 days prior to the Nov 1999 802 plenary meeting in a motion to approve. Moved: David Law, Second: Norm Finn, Technical: Y: 28, N: 0, A: 0, Motion passed at 9:40 October 1, 1999

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