2006 May 22 IEEE PoEPlus Task Force Minutes

Start at 09:10.

Hugh Barrass running until Mike McCormack arrives.

Agenda: (agenda_1105.pdf)

- Wireless
- Appoint Recording Secretary
- Discussion of order
- Intros
- Background stuff
- Presentations
- Review of Objective, timeline
- Approve Minutes / other motions

Meeting Order

- Mon & Tue – 09:00-17:00 P802.3at
- Wed – 09:00-12:00 802.3au / 13:00-17:00 P802.3at
-

Motion to approve schedule by Derek Koonce, seconded by Landry
Approve by voice without opposition

Ground Rules – mutual respect and consideration

- No cost, product pitches, etc
- All may speak and vote
- No restrictions on presentations or materials
- No prices in any currency
- 802.3 rules apply

Rules – in general… behave
Rules – web sites presented for bylaws, operating rules, etc presented. Also Roberts

IEEE Structure reviewed

Patent Policy read by Hugh Barass

- Links provided – http://standards.ieee.org/board/pat/index.html
- Any patents disclosed requested – none
- questions or patent applications issues brought up
    - Discussion about if company A was involved with standard, and is either patenting or plans to patent a method, then decides, after standard is passed, to enforce patents, is this ethical and allowed?

Electronic information

- Web address – www.ieee802.org/3/at/index.html
- eMail reflector – stds-802-3-poep@ieee.org

- Next meeting – watch www.ieee802.org/meeting/index.html
  - Plenary in San Diego for July'06

802.3au Information – pretty much done

General introductions

Schedule

Presentation Order

Mon am: Classification ad-hoc

Dave Dwelley – Class Ad-hoc summary (robbins_2_0506.pdf)

Mon am: Technical details (voltage and current)

Fred Schindler – Vport static and transient response (schindler_1_0506.pdf)

Bill Delveaux – Cable Current Measurement (delveaux_1_0506.pdf)

Mon pm: 2-pair & 4-pair topics

Yair Darshan – Possible PDs Market and System Configurations rev 001 (darshan_2_0506.pdf)

Steve Robbins – 4P Alternatives (robbins_1_0506.pdf)

Layer 2 management

Hugh Barrass – Stateless vs stateful management (barrass_1_0506.pdf)

Hugh Barrass – Stateful power management proposal (barrass_2_0506.pdf)

Hugh Barrass – Some thoughts on managed power objects (barrass_3_0506.pdf)

PD proposals

Yair Darshan – Flexible PD implementation driven Architecture 001.pdf (darshan_1_0506.pdf)

Yair Darshan – Suggested PD specification.pdf (darshan_3_0506.pdf)

Presentations

Dave Dwelley – Class Ad-hoc summary (robbins_2_0506.pdf)

- Summary
  - 5 meetings, 1 hr each
  - Limited progress made
- 2 fundamentally different
  - Single signature
  - Dual signature
  - Generally incompatible – committee needs to select
- Goal of committee should be to make the decision

Fred Schindler – Vport static and transient response (schindler_1_0506.pdf)

- Estimate minimum static MDI voltage
  - PSE circuit diagram
  - Supply tolerance, load, transient response, CM choke & PCB resistance, Rsense & MOSFET (value, internal/external), fuses, PHY transformer
- Considerations

    - Load variation
    - Commonality of system implementation
- Main Parameters
    - Ac-dc: 3.7% tolerance, 50mOhm output resistance, CM choke & PCB (30 mOhm)
    - Port: Rsense + MOSFET (0.53 to 1.5 Ohm), diode (0 to 0.7 V), fuse (0 to 2x0.5 Ohm), xfmr & choke (0.5 Ohm), 48 ports
    - Cable: CAT-5
    - Spreadsheet (schindler_2_0506.xls) provided for playing with
- Why 48 ports
    - Broadest part of market
        - 15.4W x 48 = 740 W
    - 15 A, ac power circuit in Japan (100 Vac)
        - 700 W of PoE power avail
        - 200 W of non-PoE power avail
        - 75% breaker derate
- Method
    - Calculate max & min drops from power supply to the MDI
    - Max: max PoE pwr draw, largest path resistance and V-drops
    - Min: 1-port ON at minimum holding current, lowest path resistance and V-drops
    - Optimize results for always-present minimum voltage drop
- Can the V-port min be increased?
- Recommendations for Static Port Voltage
- Dynamic Port Voltage
    - Provides bounds that designs can meet
    - Identify existing constraints
    - Dealing with back-up system power supply
    - Review system solutions for dealing with transients

Bill Delveaux – Cable Current Measurement (delveaux_1_0506.pdf)

- Third party testing
    - Independent test house
    - Testing started this month

Baseline topics for agreement to get out of “ground work” of schedule

- Identify Clause 33 edits – how does this fit in?
- Current capability, cable heating & specifications
- Port voltages
- PSE / PD system configuration: 2p; 4p; y-cable
- Location of current sharing in 4-p
- Intra-pair balance
- Single vs. dual signature
- Classification method / number of classes / class allocation
- Icut & Ilim (probably too detailed for baseline)
- L-2 management architecture

- L-2 / L-2 interaction: who over-rides who
- Midspan 1G
- Maintenance requests…

Yair Darshan – Possible PDs Market and System Configurations rev 001 (darshan_2_0506.pdf)

- Should be PD driven architecture
- Discussion of 802.3at 2PMP and 802.3at 4PHP may work came up as not on the matrix of compatibility. Rebuttal is that this can occur.
- Presentation will be revised to clarify where there is a Y-cable used.

Steve Robbins – 4P Alternatives (robbins_1_0506.pdf)

- If working with a dual-signature, isolation will be required between the two interface-PWM circuits
- Discussion on "Do We Really Need Case 5/6," slides 14 & 15
- Presented information on PSE tester implications

Dave Dwelley – Brief summary of connection options presented in spreadsheet format. This will be passed around.

- Questionable configs – layer 1 only
    - AF PSE to at2 PD
    - AT4 PSE to 2x at2 PD
    - 2x AF PSE to at4 PD
    - 2x AF PSE to at4 iso PD
    - 2x AT2 PSE to at4 PD
    - 2x AT2 PSE to at4 iso PD

Hugh Barrass – Stateless vs stateful management (barrass_1_0506.pdf)

- Open for proposals for MIB that does not piggy-back upon another

Hugh Barrass – Stateful power management proposal (barrass_2_0506.pdf)

- Agree not to do a PD MIB

Will continue Tuesday at 0900.
Meeting recessed at 17:15

2006 May 23 IEEE PoEPlus Task Force Minutes

Start at 8:10.

Presentations

Hugh Barrass – Some thoughts on managed power objects (barrass_3_0506.pdf)

- Proposed objects for Layer-2
- Open for further suggestions and comments

Yair Darshan – Flexible PD implementation driven Architecture 001.pdf (darshan_1_0506.pdf)

- Discussion on semantics between "balancing" and "sharing"
- Motion suggested to not only spec pair-set to pair-set balance
    - In a 4P system, sharing will be required, but balance will not.
    - Dave Dwelley will work on the wording for Wednesday's motion making.

Yair Darshan – Suggested PD specification.pdf (darshan_3_0506.pdf)

Not covered. This is a supplement

Michael Altman – 2P/4P Migration for AT (altman_1_0506.pdf)

- Supports the two 2P approach and not the complete 4P

Yair Darshan – Informal cabling testing by PowerDsine

- 550mA pair (275mA per wire) for 5 °C rise – measured Cu temperature by measuring resistance
- 36 cables in conduit

Motions:

No. 1: The IEEE 802.3at Task Force determines 1 W as the lowest PD Layer 1 class level.

- Motivation and Direction
    - Enhancing Clause 33 classification, it was agreed that: The minimum class level should be lower than 3.84 W.
    - Most applications need a maximum power of 1 W or above: For power requirements lower than 1 W, other power allocation methods can be used
- Discussion
    - Why 1 W minimum – low power mode
- Straw pole: threshold at 1W: Y-10, N-14, A-14 – amended to 2W minimum
- **Revised motion (technical)**: *The IEEE 802.3at Task Force determines 2 W as the lowest PD Layer 1 class level.*
- By Daniel Feldman
- Seconded by Ferdinando Lari
- Y: 33 – N: 1 – A: 6
- 802.3 voters: Y: 26 – N: 1 – A: 4
- Motion PASSED

No. 2: The IEEE 802.3at Task Force determines that PD's should be classified in up to 10 classes for operation over 2-pairs (technical).

- Motivation and Direction
  - Enhancing Clause 33 calssification, it was agreed that: the number of classes should rise
  - Ten Layer 1 classes should provide enough granularity to support up PD's consuming up to 30W over 2-pairs
    - Average 3 W per class
    - Steps do not have to be linear
    - IEEE802.3af-2003 classes 1, 2 and 3 should be preserved
- Discussion
  - Need to specify Layer 1
  - Need to clarify that 802.3af classes be included
- **Revised motion (technical)**: *The IEEE 802.3at Task Force determines that PD's be classified in up to 10 Layer 1 classes, including the IEEE802.3af classes, for operation over 2-pairs.*
- By Daniel Feldman
- Seconded by Wael Diab
- Y: 30 – N: 1 – A: 4
- 802.3 voters: Y: 25 – 1: y – A: 3
- Motion PASSED

Jo Dupuis – Cabling presentation (dupuis_1_0506.pdf)

- Bundle of 150 cables, measuring center cable
- 425mA per conductor under 100% load from 23.7°C ambient to 29°C for CAT6a, 34°C and higher for CAT5e. – 5.3°C to 9.3°C rise
- At 275mA per conductor under 100% load from 24°C ambient to 26°C for CAT6a, 31°C for CAT5e
- Showed graph of temperature rise vs current for several cable types
- Showed graph of power delivered to PD based on current and 50V out PSE output

Fred Schindler – Conclusion of Vport Static Discussion (schindler_3_0506.pdf)
(With new spreadsheet)

- Updated schindler_1_0506 presentation and the spreadsheet.

No. 3: Move that the IEEE 802.3at Task Force adopts 50V as the minimum V_{port} (See IEEE 802.3af-2003, Table 33-5, item 1) for PoE Plus. (technical)

- Motivation and Direction
  - Based on schindler_3_0506 presentation
- Discussion
  - Earlier was 51.5V based on simplified calculations, this is based on better work.
- By Fred Schindler
- Seconded by Wael Diab
- Y: 37 – N: 0 – A: 1

- 802.3 voters: Y: 29 – 1: 0 – A: 1
- Motion PASSED

David Law – Temperature vs Current

- Three options
  - Use cable temperature margin (if any)
  - Derating curve – difference between ambient and cable rating determines current
  - Derating temperature – the ambient must be x°C below cable rating

Chairman will collect existing errata on the IEEE 802.3af

No. 4: Direct the chair of IEEE 802.3at to generate an informal communication to:
1) ISO SEC reminding them the respond to the temperature data request
2) TR42 requesting a time slot for interested parties to meet on July 13, 2006 in the afternoon.

- By Wael Diab
- Seconded by Hugh Barrass
- Passed by voice without opposition

Summary of motions:

- No. 1: The IEEE 802.3at Task Force determines 2 W as the lowest PD Layer 1 class level. (technical) - PASSED
- No. 2: The IEEE 802.3at Task Force determines that PD's be classified in up to 10 Layer 1 classes, including the IEEE802.3af classes, for operation over 2-pairs. (technical) - PASSED
- No. 3: Move that the IEEE 802.3at Task Force adopts 50V as the minimum V_{port} (See IEEE 802.3af-2003, Table 33-5, item 1) for PoE Plus. (technical) - PASSED
- No. 4: Direct the chair of IEEE 802.3at to generate an informal communication to:
- 1) ISO SEC reminding them the respond to the temperature data request
- 2) TR42 requesting a time slot for interested parties to meet on July 13, 2006 in the afternoon. – PASSED by voice

Chair asked if anyone wants to do presentations for a 3-day interim. There was no opposition for a 2-day session – passed.

Motion to adjourn the meeting for the week
Passed by voice by opposition

Submitted by Derek Koonce, acting secretary