Detection Ad Hoc
Status
Since March Meeting to May 23, 2001

(This records the results as of the <u>end of the May 23</u> Detection Ad Hoc Working Session)

Don Stewart
Avaya Inc.

Detection Ad Hoc Attendance May 23, 2001

Bachand, Jerry	Avaya	Jetzt, John	Avaya
Brooks, Rick	Nortel	Karam, Roger	Cisco
Brown, Kevin	Broadcom	Kerenyi, Larry	Supertex
Burton, Scott	Mitel	Leo, Lisa	Tyco
Cullin, Chris	Cisco	Levy, Avinoam	PowerDsine
Darshan, Yair	PowerDsine	Lynch, Bryan	TI
Diab, Wael	Cisco	Moody, Kris	Orion Design Tech.
Dwelley, Dave	Linear Tech		
Elbanhawy, Alan	Fairchild	Nakamura, Karl	Cisco
Heldman, Ronen	PowerDsine	Rasimas, Jennifer	Nortel
Hemmah, Steven	TI	Schweartz, Peter	Micrel
Huynh, Thong	Maxim	Stewart, Don	Avaya
Inn, Bruce	Micrel	Woodring, Mike	Fairchild
Ish Shalom, Ran	Avaya		

Ad Hoc Areas of Focus, 3/16 to 5/23, 2001

- Classification
  - How to achieve multiple classifications
  - Use one classification as a double-check for base detection
  - What do classifications mean

- Discovery Operational Scenarios
  - False Discovery of a PSE by another PSE
  - Discovery of a PD by two PSEs
  - Discovery with three devices on one pair set (I.e., ISDN bridged connection, inappropriate wiring)

Multiple Classifications - Preparatory Work

- Via the Ad Hoc Reflector
  - In *April,* we straw polled preferred techniques
  - In May, Rick Brooks proposed concepts meeting favored techniques (used current dimension)
  - Others critiqued, and placed in requirements format (source material for editor)
  - Yair Darshan proposed complement/dual for consideration (used voltage dimension)

Classification Concepts - Straw Votes

- Perform classification in the Current dimension (for a given voltage range):   For __15__, Against__0__, Abstain _6___

  Significant Result

- Perform classification in the Voltage dimension (for a given current range):   For __4_, Against__13__, Abstain __5__

- We should encourage proposals for modulating classification current to give a much larger set of classes, provided they do no cause a delay in the standard:

    For __16__, Against__3_, Abstain __3__

  Has support, but can't slow progress.

- The standard should require that base detection shall be attempted before optional classification.

    Agree __19__, Disagree __0__, Abstain __3__

  Significant Result

- We should pursue detection and classification utilizing a single detection methodology. This would abandon the 25K ohm slope detection.

    Agree __5__, Disagree __12__, Abstain __8__

Classification Concepts Straw Votes

- Decide framework for specifying "PSE validation" for classification stage

  - No vote taken

  - Agreed current and voltage limits during classification must be defined

  - No source impedance limits are required since we require basic slope detection first and that is the line of defense for avoiding a PSE detecting a PSE

Significant Result

False Discovery of a PSE by another PSE

- Discussed and straw-voted alternatives:
  - Remove the generalized source impedance figure from Detection Source material (e.g. outlaw low Z PSE)

    For __5__, Against_8___, Abstain __12__

  - Give high-Z PSEs one voltage range (e.g., 2.8-6.5) and low-Z PSEs another (e.g., 6.5-10)

    For __7__, Against__2__, Abstain __14__

  - Take no special steps to avoid this false detection.

    For __19__, Against__0__, Abstain __5__

  - Mandate that all detections include both a 25K ohm basic detection and a classification measurement (I.e.,at some current)(double check)

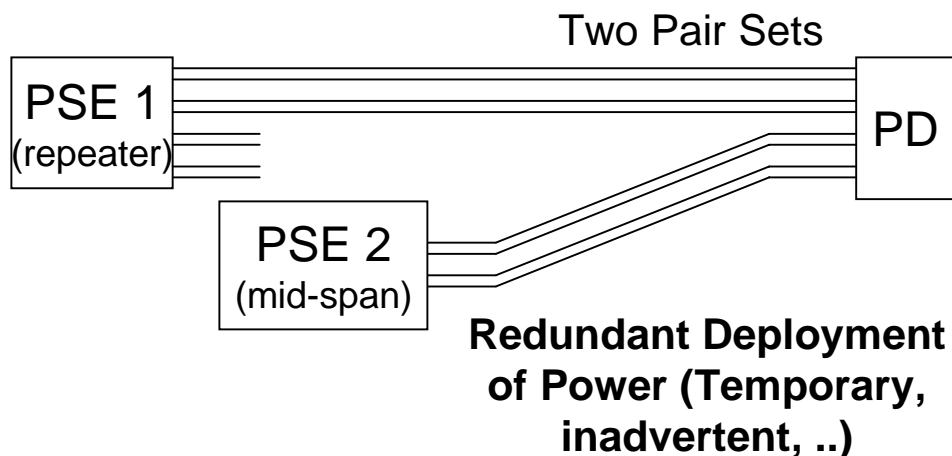   For __11__, Against__4__, Abstain __5__(meaningless due to subsequent votes)

Important Result. False detection will be rare and PSE will not be damaged anyway

PSE-PSE-PD Connections (2 pair sets)

Assume both PSEs are present and a PD is then connected …..

We could guarantee:

- That one or more PSE detects*

- That exactly one PSE detects

- That neither PSE detects

- Only the absence of damage; has no predictable detection or start-up

Two Pair Sets

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┌──────────┐                              ┌─────┐
│ PSE 1    │══════════════════════════════│     │
│(repeater)│══════════════            ════│ PD  │
└──────────┘       ══════╲         ╱══════└─────┘
          ┌──────────┐    ╲═══════╱
          │ PSE 2    │═════════
          │(mid-span)│═════════
          └──────────┘
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Redundant Deployment of Power (Temporary, inadvertent, ..)

* March 13th "Show of hands"

- "We need reliable (guaranteed) detection and delivery of power to a PD that is being detected by two PSEs (on both pair sets)"
    - Agree: <u>28</u>
    - Disagree: <u>1</u>
- "It is acceptable to have the PD solve the "delivery of power from two PSEs" problem by providing two <u>fully independent</u> signatures
    - Agree: <u>16</u>
    - Disagree: <u>12</u>

PSE-PSE-PD Connection (two pair sets)

- Straw polls to clarify type of detection guarantee:

  - For the guaranteed detection and delivery, it is acceptable for _both_ PSEs to detect and deliver power (up to max of 12.95 W)

    Agree ____1____, Disagree ____21____, Abstain ____9___

  - For the guaranteed detection and delivery, _exactly one_ PSE is to detect and deliver power

    Agree ____18____, Disagree ___0____, Abstain ___10____

Significant Result

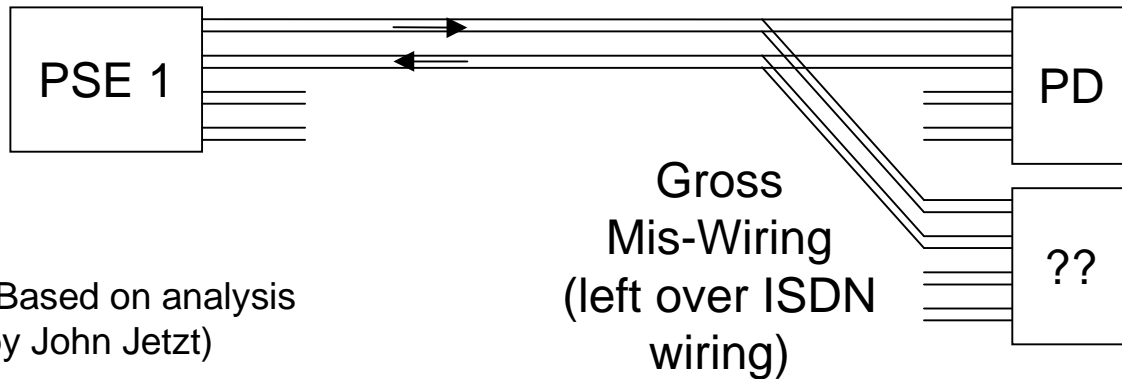# PSE-PSE-PD Connection (two pair sets)

- Multi-voted items below (voted for "your top 2")
- Solve in the **PSE**
    - One class of PSE ("signal" Vs "spare") has an idle period if a collision (failure not due to open circuit) is detected **[_7_]**
    - Different cadences, "signal" Vs "spare" **[_14_]** ⬅
    - Different detect voltages, "signal" Vs "spare" **[_0_]**
    - Repeater PSE gives "inhibit" signal on spare pairs to mid-span PSE (must be different than open, short, Bob Smith) **[_0_]**
    - Have mid-span PSE detect DC voltage on signal leads **[_9_]**
    - One class of PSE ("signal" Vs "spare") has an idle period if a PD insertion is detected **[_3_]**
- Solve in the **PD**
    - Mandate a preference be given to power from "signal" or "spare" **[_4_]**
    - Mandate that the PD make a choice **[_5_]** ⬅

PSE-PSE-PD Connection (two pair sets)

- Scenarios solution should address
  - Two PSEs pollute each other's detection; no detection
  - For two signatures and two PSEs: both detect successfully
  - For One signature, two PSEs: both detect successfully and race to provide voltage
  - May not have continuity for either pairs between the two PSEs (they may first meet at patch panel)
- Plan for researching solutions (examine over next 3 weeks)
  - In PSE, via Different cadences, "signal" Vs "spare" (Dave Dwelley)
  - In PD (Roger Karam)

Additional Time Required

PSE-PD-?? Connections - What Should Detection Provide

There are no Detection Issues here

PSE 1 ———→ ←——— PD

Gross
Mis-Wiring
(left over ISDN
wiring)

??

- Another PD
- Another PSE
- Laptop/Bob Smith, etc

(Based on analysis
by John Jetzt)

- Once PSE-PD is in powered mode, detection <u>can not avoid damage</u> to a Laptop/Bob Smith connected later; follows detection so no detection issue (but might suggest changes to non-powered 802.3 DTE to protect themselves)

- If the (??) device is a PD, either will be no damage (if added later) or will not be detected (if there initially) w/o special detection steps

- If the (??) device is a PSE,

    - Is very unlikely (second error)
    - There's no damage to either PSE or PD; no special detection steps are required *

* Informal poll Rick Brook took indicated that most do <u>not favor</u> guaranteeing that neither PSE successfully discovers in this case of a PSE-PSE-PD connection

Use One Classification as a Double-Check for Base Detection

- An interest was expressed March/April to use one classification as a double check on basic 25K Ω slope detection ("belt and suspenders")

- In Hilton Head, agreement was classification is an option

- Motion we passed in 2000 agreed base detection would be resistive

- Hopefully any remaining interest can be met by
  - The option for a third measurement on the slope but at a higher voltage (can be a useful thing to do anyway if you do classification)
  - Reserving 1 or 2 classification areas "for future use"

- **<u>No action proposed</u>**

Definition of Classes

CLASS	Proposal 1	Proposal 2	Proposal 3	Proposal 4
Mandates classification	No	Yes	Yes	No
0 (25K ohm)	0.5-15W	4 W	2	0-15
1	4	7	4	7
2	7	15	7	4
3	15	?	15	?
4	?	?	?	?
For	18	2	1	6
Against	1	15	13	5
Abstain	6	8	11	14

Significant Result

Additional Work Items For May 24-25

- Need to discuss/agree on current bands/levels (20 min)

- Discuss/agree on timing limits (20 min)

- Refine thoughts around the "attempted" part of: "The standard should require that base detection shall be attempted before optional classification" (20 min)

- Walk through Detection source material (for editor) (2 hours)