

FINAL SUMMARY
IEEE 802.3at CLASSIFICATION
AD HOC MEETINGS

IEEE 802.3at
Denver 3/06

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IEEE 802.3at CLASSIFICATION AD HOC SUMMARY

- **4 meetings via teleconference ending 3/2/06.**
- **The following summary provided here is based solely on Clay's perception of the feelings in the "room".**
- **I have divided classification requirements into three categories:**
 - **Strong Agreement,**
 - **Weak Agreement**
 - **Significant Controversy**
- **I encourage ad hoc attendees to speak up regarding my summary of the meetings.**

IEEE 802.3at CLASSIFICATION REQUIREMENTS

- **Strong Agreement**
- Backward compatibility with 802.3af is required.
- Mutual identification is required:
 - a. An AT-PD must be able to distinguish between AF-PSE and AT-PSE
 - b. An AT-PSE must be able to distinguish between AF-PD and AT-PD.
- Classification will be mandatory in AT-PD and AT-PSE as a method to implement mutual identification.
- Class policing will remain optional.
- 25K signature resistance will not be changed.
- 802.3af class resolution is too coarse and finer resolution will be implemented.
- “Variable classification resolution” by either PSE or PD will not be used.
- Adding more information into classification such as vendor ID will not be supported.
- One of the purposes of classification is to implement power allocation (management) prior to powering the PD.

IEEE 802.3at CLASSIFICATION REQUIREMENTS, CONTINUED

- **Weak Agreement**
- Classification power range is 2W to 100W.
- Advanced power management, for example dynamic power allocation will not be done in layer 1. (It may be performed in Layer 2.)
- Layer 2 power management is optional.
- Classification method will support midspan and endpoint PSEs, i.e. performed in layer 1.

IEEE 802.3at CLASSIFICATION REQUIREMENTS, CONTINUED

- **Significant Controversy**
- The classification scale should be roughly Logarithmic, or log like.
 - Certainly logarithmic for high power classes
 - Probably linear for low power classes
- The number of classes should be in the approximate range of 30-40.
- One of the purposes of classification is to implement class policing (i.e. current limit that adjusts with class).

ISSUES NEEDING FURTHER DISCUSSION

- What should the low end of the power range be; 1W, 2W, or other?
- Should we use worst-case or statistical analysis to calculate utilization and the number of classes required?
- What method should be used to implement classification?
- Is it acceptable to power for example a 20 watt PD using all 4-pair when it could be powered with only 2 pair?
- Should a 4-pair PD that fails to get power provide user with a two-level failure indication, one for an AF-PSE and another for a 2-pair AT-PSE?
- How do the proposed requirements affect system test time?
- How do the proposed requirements affect system test complexity?
- Do the proposed requirements provide a good balance between cost and benefit?
- Several questions interrelated to the architecture used for 4-pair systems:
 - Should 4P verification be done during classification or detection?
 - Should the PD have one signature (visible on all 4 pairs) or 2 separate signatures (one on Alt-A and the other on Alt-B)?
 - Should 4-pair systems be treated as two autonomous 2-pair systems?
 - In a split cable installation using a 4P AT PSE, is it expected that both PDs should receive power?

ITEMS TO CONSIDER WHEN EVALUATING VARIOUS CLASSIFICATION METHODS

- Does the method meet all the requirements?
- How does the method affect system test time?
- How does the method affect system test complexity?
- What is the PSE cost?
- What is the PD cost?

PRESENTATIONS

- Yair Darshen provided a Comparison Table.
- Classification_methods_review___Comparision_table.pdf
- Yair referenced several previous works
- http://grouper.ieee.org/groups/802/3/poep_study/public/jul05/Classification_Resolution_Requirements_Analysis_darshan_2_0705.pdf
- How power Management Reduces System Costs: darshan_2_0305.pdf
- Classification Resolution Analysis: darshan_3_0705.pdf
- Yair presented a new version of the time based classification scheme.
- Backward-Compatible_Enhanced_Class_Rev_2.doc
- Yair presented an analysis of power supply utilization: Classification_Worst_case_Analysis.pdf
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- Steve Robbins presented “Extended Detection Protocol for 4p PSE”
4P_Detection_B_W.pdf
- Steve presented a worst case power supply efficiency analysis:
WC_Analysis_2.pdf
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- Stanford presented issue with 4P PSE and AF PD.:
4P_AT_PSE_with_AF_PD.pdf
- Clay presented several possible 4P architectures.: 4P_AT_PD.pdf
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- Christian Beia presented backwards compatible enhanced classification scheme rev 1 and 2.