

IEEE802.3at Task Force

What is Power Management in PoE

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Yair Darshan
PowerDsine



Objectives

- To explain how power management term is used in PoE
- Motivation:
- To clarify the use of terms associated with power management for better communication between group members.



What is Power Management in PoE system

- The ability to
 - Deliver/Limit/Stop power to the port when needed
 - Startup
 - Normal powering
 - Ab normal conditions
 - Protect infrastructure
 - Manage system power budget to:
 - Efficiently utilize its resources
 - Reduce system costs
 - Reduce heat generation
 - Allocating power per load needs
 - Ensures load (PD) functionality
 - Address load dynamic behavior



Classification and Power Management

- Classification is the standard tool in 802.3af¹ for allocating the power for the PD.
- Other power allocation tools can be used as additional information to classification (not to replace classification) however they were out of scope of the 802.3af
- Power allocation by load classification allow:
 - Controlling the PSE power supply size in its operating environment (Market, organization etc)
 - Successful startup in multi-port system
 - Prevent system collapse during startup

References

- IEEE802.3af
- How Power Management reduce system costs. March 2005, Yair Darshan



Annex A – Classification role in IEEE802.3af

33.2.7 PSE classification of PDs:

The PSE may optionally classify a PD to allow features such as load management to be implemented.”

33.2.9 Power supply allocation

- PSE shall not supply power to the link if PSE power available < PD Pclass

“A PSE shall not initiate power provision to a link if the PSE is unable to provide the maximum power level requested by the PD based on the PD’s class. “

- If PSE is not classifying, it treats the PD as class-0 (max power)

“Where a PSE does not provide the optional classification function specified in 33.2.7, all PDs are treated as Class 0.”

- PSE can allocate power based on additional information beyond the classification but classification is the minimum piece of data required. Layer 2 can not be used without classification.

“The PSE may manage the allocation of power based on additional information beyond the classification of the attached PD. Allocating power based on additional information about the attached PD, and the mechanism for obtaining that additional information, is beyond the scope of this standard with the exception that the allocation of power shall not be based solely on the historical data of the power consumption of the attached PD.”