

# A Review of Classification Schemes – with a focus on dynamic power negotiation

Gordon Kapes    **GORDON KAPES|INC.**  
and esteemed colleagues

# Overview

- 1-time coarsely granular max power request (802.3af)
- 1-time finely granular max power request
- 1-time max and avg. power request
- Higher layer 1-time max power
- Higher layer dynamic power negotiation
- Layer 1 analog dynamic power negotiation

# 1-Time Coarsely Granular

- As it's done in 802.3af
- Simple
- Deployed
- Poor power management utility
- Doesn't scale power levels efficiently

# 1-Time Finely Granular

- As in proposals thus far for PoE+
- Improved power level scalability
- Static, maximum power only
- Hinders PSE power management
- Encourages power supply overdesign
- Doesn't acknowledge dynamic power consumptive nature of common powered devices (phones, WAPs, cameras, alarms)

# 1-Time Max and Average Power Requirements

- Average power is difficult to accurately predict (for many applications)
- Provides some insight into statistical power supply utilization
- Doesn't necessarily increase power supply utilization efficiency
- Might provide indication of power supply upgrade needs

# Higher Layer Maximum Power

- Pre-802.3af power accounting method
- Allows arbitrarily fine granularity and scalability
- Requires link establishment
- Not midspan friendly
- Doesn't meet scope requirements of PoE+

# Higher Layer Dynamic Power Negotiation

- Pre-802.3af power accounting method
- Allows arbitrarily fine granularity and scalability
- Allows non-disruptive renegotiation of power delivery
- Optimizes power supply utilization
- Requires link establishment
- Not midspan friendly
- Doesn't meet scope requirements of PoE+

# Layer 1 Analog Dynamic Power Negotiation

- Coexists with enhanced hardware classification method
- Allows non-disruptive renegotiation of power delivery
- Optimizes power supply utilization regardless of classification granularity
- Hardware based classification does not preclude midspan solution
- Effectively allows system-level power management on both ends of the link
- Optional implementation dictated by market forces
- Nonzero implementation cost
- Some implementation methods may be covered by preexisting IP