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General Comments

Martin Patoka

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- Introduction
  - Share thoughts on ideas and issues
  - Many of these issues have been previously discussed

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- Two Pair
  - Lower PSE silicon ⇒ Small, Simpler
  - Less overhead for PSE ⇒ Reduced system Impact
  - Fewer States and Fault Conditions ⇒ More Robust
  - Scaling of Existing System ⇒ Easier/Faster to Design/Implement for all Vendors
  - Avoids Incompatibility where There are Two Drops per Cable
- Four Pair
  - Double Power
  - Added Overhead Complexity

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- Agree with Restricting PSE Voltage to the High End of 802.3af Range
  - For Example, 54.5V ± 2V

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- PD Startup
  - Agree that PD Must Detect/Startup in 802.3af Compatible Mode
    - Allows Insertion into Existing Ports to Test if They are Compatable
      - PSEs may have both Plus and 15.4W ports
    - Allows Human Interface Indication of (In)Compatibility
    - Allows Intelligent “Plus” Class Implementation
    - Similar to IPMI Principles
    - Requires Load Segmentation in the PD
    - Requires S/W Support in the PSE
    - Requires a Work-Around for “Dumb” PSEs
  - Advantages to End-Users, More Sophisticated Equipment

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- Classification is Important but a Challenge
  - Suggest using 802.3af Class 4
  - Use Communication Through the Link to Establish Power Demand above 15.4W
  - Link-Based Class Method
    - PD simply communicates its demand
    - Eliminates a Lot of Awkward Hardware Classes
    - Requires Smart PD – but Does it Make Sense to Power 40W Light Bulbs?
    - Router or Switch all ready have Ethernet H/W
  - Some PSE Vendors Currently Rely on Link, Solution Seems Viable
  - A Work-Around for “Dumb” Midspan PSE is Needed

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- PD Load Segmentation
  - Solutions are Multiple Converters or Load Switching
  - Simplest Solution is Load Switching
    - P-MOS & 3 Small Passives
    - Controller I/O pin
    - Common Technique in Low Power Applications and IPMI Solutions
    - Low Cost
  - Multiple Converters where PD Characteristic make this Advantageous
    - Example: Motor step load that:
      - causes transients on logic voltages
      - isolates jammed faults

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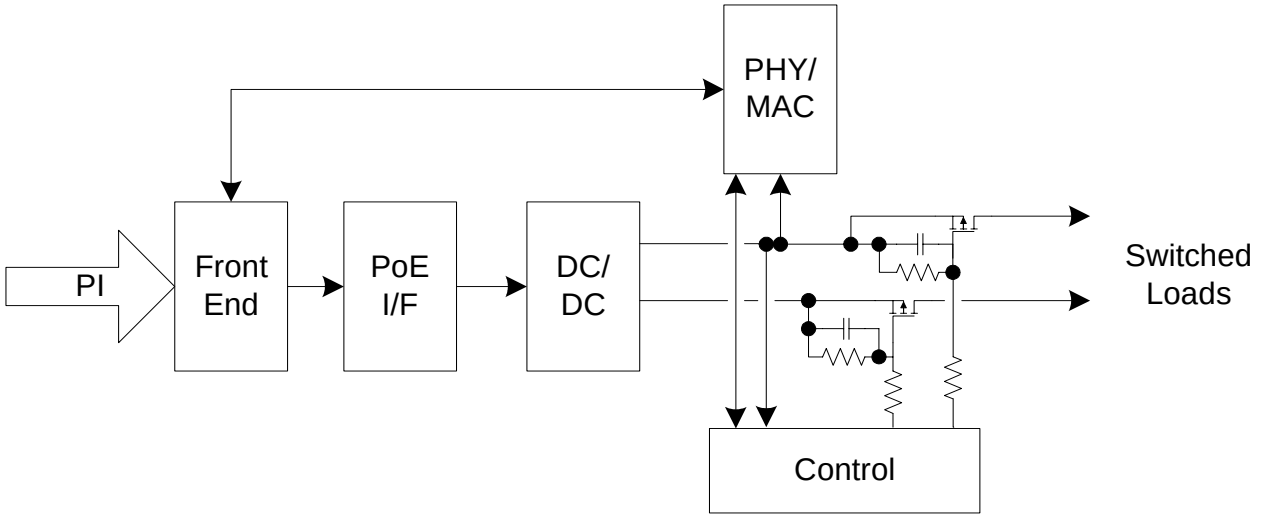
- Example Concept for Load Segmentation



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- Plus Midspan PSE
  - "Dumb" PSE must Support Full Power per Port which is the Current Solution
  - "Dumb" PSE must set power limit to 15.4W for 802.3af Class 0 – 3 and Plus Power for Class 4
    - 802.3af PDs designed for Limited Source Fault Current
  - Substitute Method of Communicating OK to Draw Full Power Required
    - Compatible with 802.3af
    - Not Fooled by Legacy PDs
    - Not Fooled by "Glitches "

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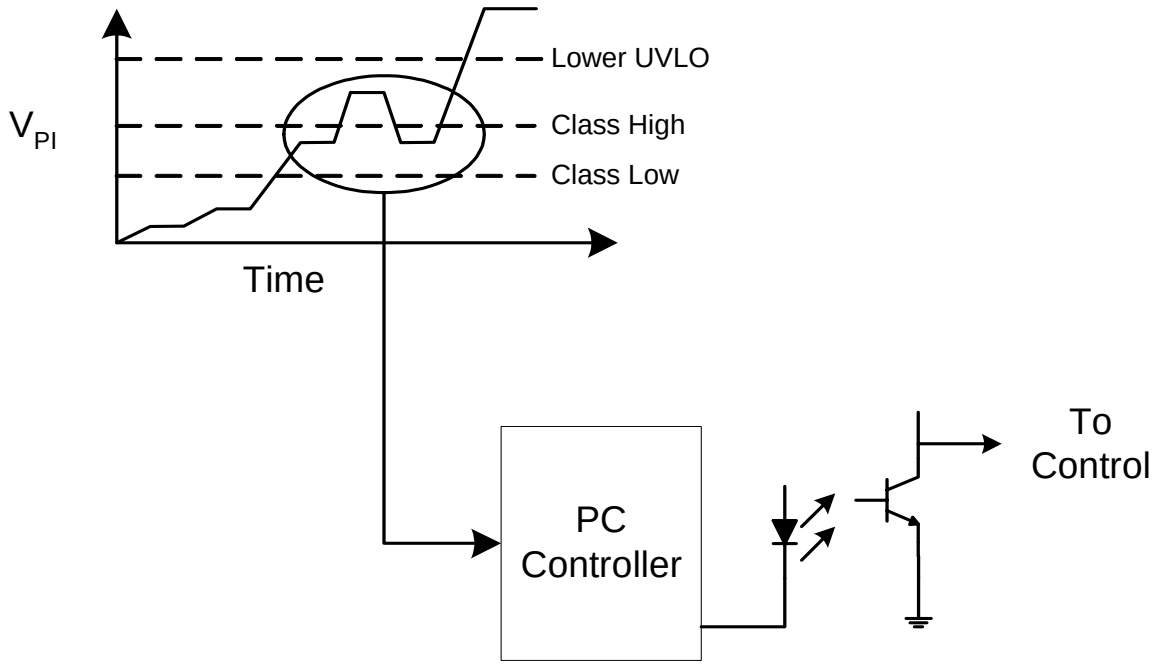
- Example Concept for “Dumb” Class Acknowledge



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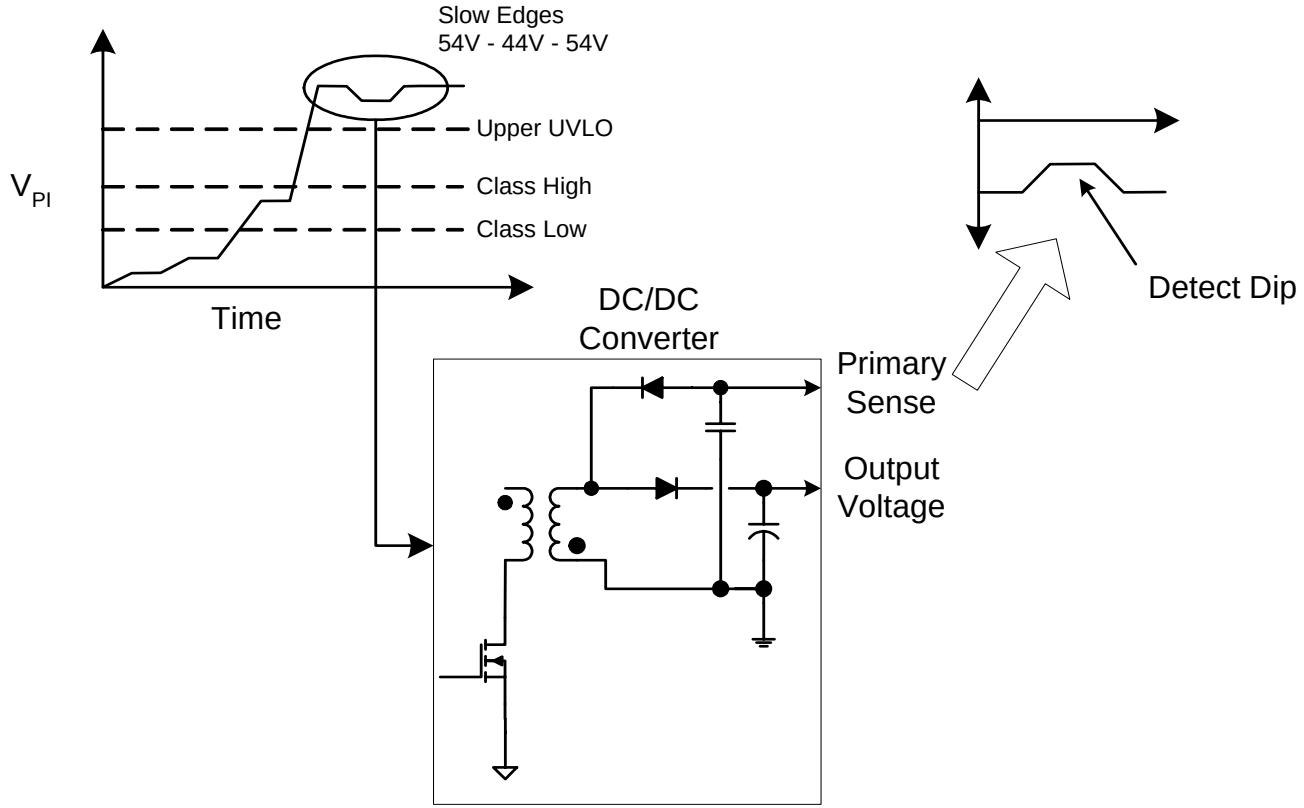
- Example 2 Concept for “Dumb” Class Acknowledge



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- Summary
  - Prefer Two Pair Delivery
  - Prefer 54V PSE
  - Prefer Startup in 802.3af Compatible Mode
  - Class over Ethernet Link
  - Simple “Dumb” Midspan Class 4 Acknowledge