

# Maximum cap without inrush control in PD

- Assuming Yair's analysis method is correct, we need to choose the max PD cap ( $C_{MAX}$ ) allowed
- $C_{PD} < C_{MAX}$ , no inrush circuit required
- $C_{PD} > C_{MAX}$ , inrush limiting required in PD
- in these slides, "N" refers to the number of PSE ports in a multi-port PSE that can power up simultaneously

# Small cap (0.1-50uF)

- Advantages:
  - Lower dissipation in PSE at turn-on
    - may allow  $N > 1$  with integrated switches (minor)
  - Faster turn-off possible with shorted line, line transients
    - Shorter line voltage ramp up allows more time for detection (minor)
- Drawbacks:
  - Requires more costly PD supply with smaller input cap **OR** requires inrush circuit in typical PD
  - May complicate EMI filter design in PD

# Large cap (50uF - 615uF)

- Advantages:
  - Allows lower cost PD supply with large input cap, without inrush circuitry
  - Simplifies EMI filter design in PD
- Drawbacks
  - PSE must be prepared to dissipate turn-on power
  - Turn-on/short circuit/transient timing is relatively longer
  - Complicates integrated  $N>1$  option