Taking the Steampunk out of PIE

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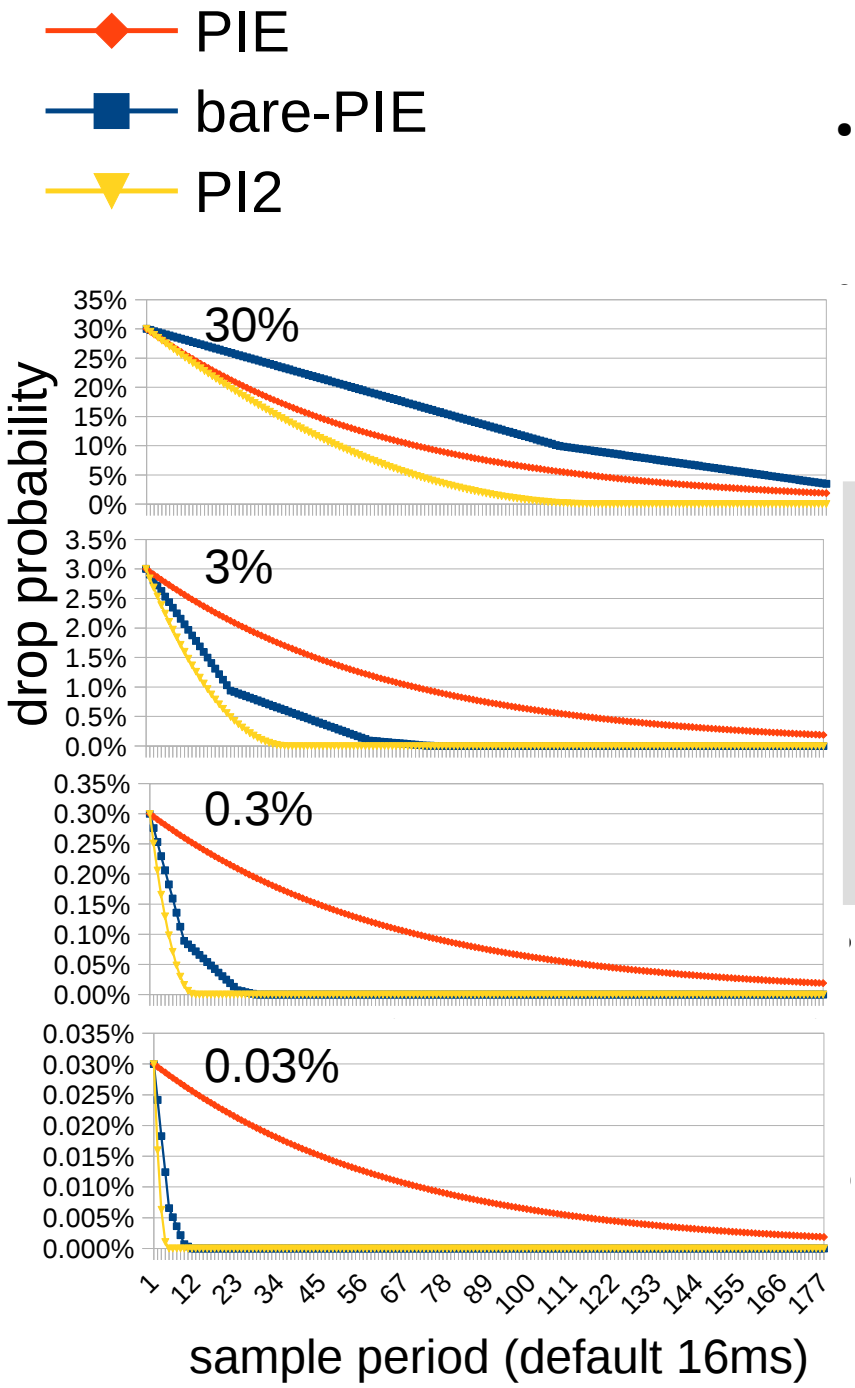
Mar 2017

Context

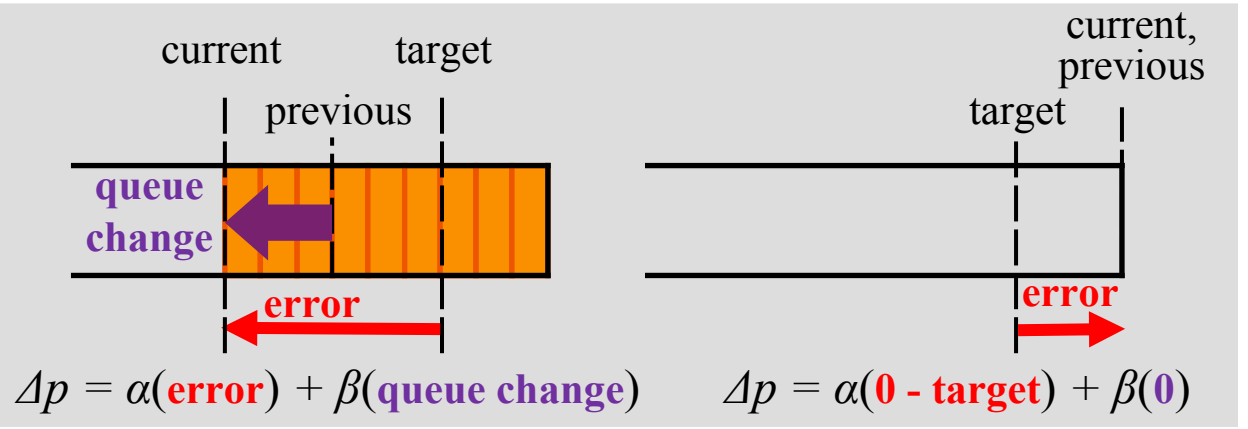
- when we first wrote PI2, no attempt to add PIE's heuristics
  - some intrinsically made redundant by PI2
  - some had no explanation, so no scenario to test
  - some we disagreed with
  - some we deferred – not easy to translate to PI2
- This presentation systematically assesses each PIE heuristic
  - using more recent write-up of the intent of some heuristics
- How many PIE heuristics necessary in PI2?
  - 2/9?

- References
  - PI2 [draft-briscoe-tsvwg-aqm-dualq-coupled-00]
    (ref [PI216] in the above discusses each heuristic)
  - PIE [RFC8033] (experimental)

PIE heuristic #2
drop decay



- when traffic stops
  - decay stale drop state for subsequent flows
- bare-PIE (without heuristics) and PI2
  - empty queue rapidly decays drop probability, Δp
  - intrinsic in PI algo, no extra code



- PIE “enhanced” heuristic
  - if two empty queue samples
  - decay drop by 2% / sample period instead
- **far better without this heuristic**
  - esp. if low drop when traffic stopped