Analytical solutions for Pool Depletion Systems

PoliCloud for parallel execution

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November 21, 2016
Pool Depletion System

- A **pool**, with a huge and fixed number $N$ of heterogeneous task
- A **system**, with finite capacity $K$
Tools and Techniques

Several techniques:

- Analytical equations
- Stochastic model
- Simulation (JMT, ...)

State space size:

- single-class workload, $N = 100$ and $K = 1 \rightarrow 201$ states
- multi-class workload, $N = 80$ and $K = 40 \rightarrow 470771$ states
- State space explosion
10 configurations to analyze:

• ~26 hours → N=200, K=16 and multi-class workload
Conclusions

- We are using PoliCloud for parallel executing different configurations of a pool depletion system
  - A lot of time has been saved:
    - Single machine
      → 26 hours * 10 configs = 260 hours ~ 11 days
    - PoliCloud → 26 hours
- Future work:
  - Simulations on PoliCloud
References


Thanks for your attention