Reducing Tail Latencies For Datacenters with High Workload Arrival Rates

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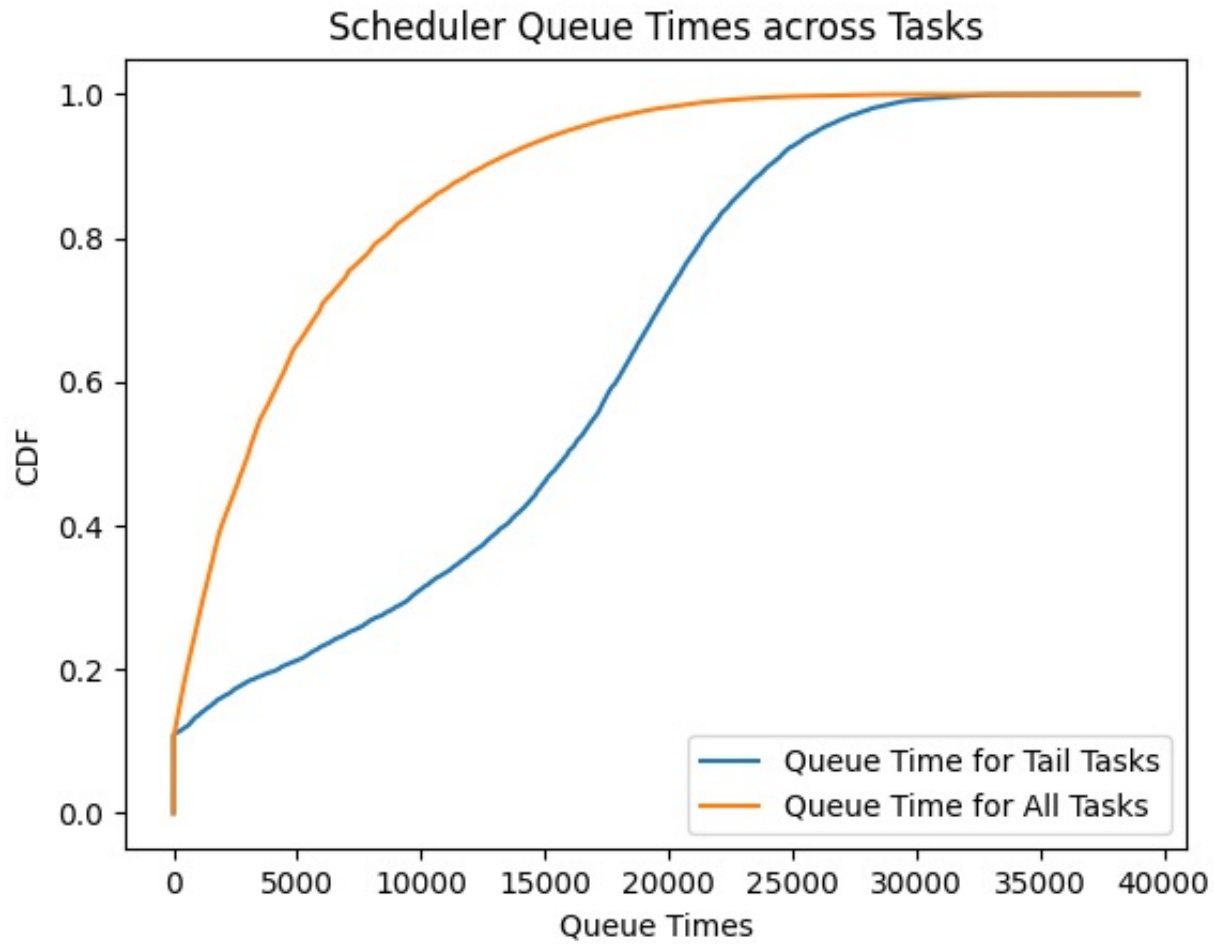
Presentation to Huawei• 21st Sept, 2022

Research Motivation

Minimize *Job Completion Times* at Cloud and Workload Scale

Kubernetes Centralized Scheduler



Large scheduler queue times for tail tasks

Large task completion times for tail tasks

Goals

- Small Tail Task Latency
- Better Overall Scheduler Placement Quality
- Scheduling Scale

Design Elements

- Small Scheduler Queue Time

Smaller Tail Task Latency

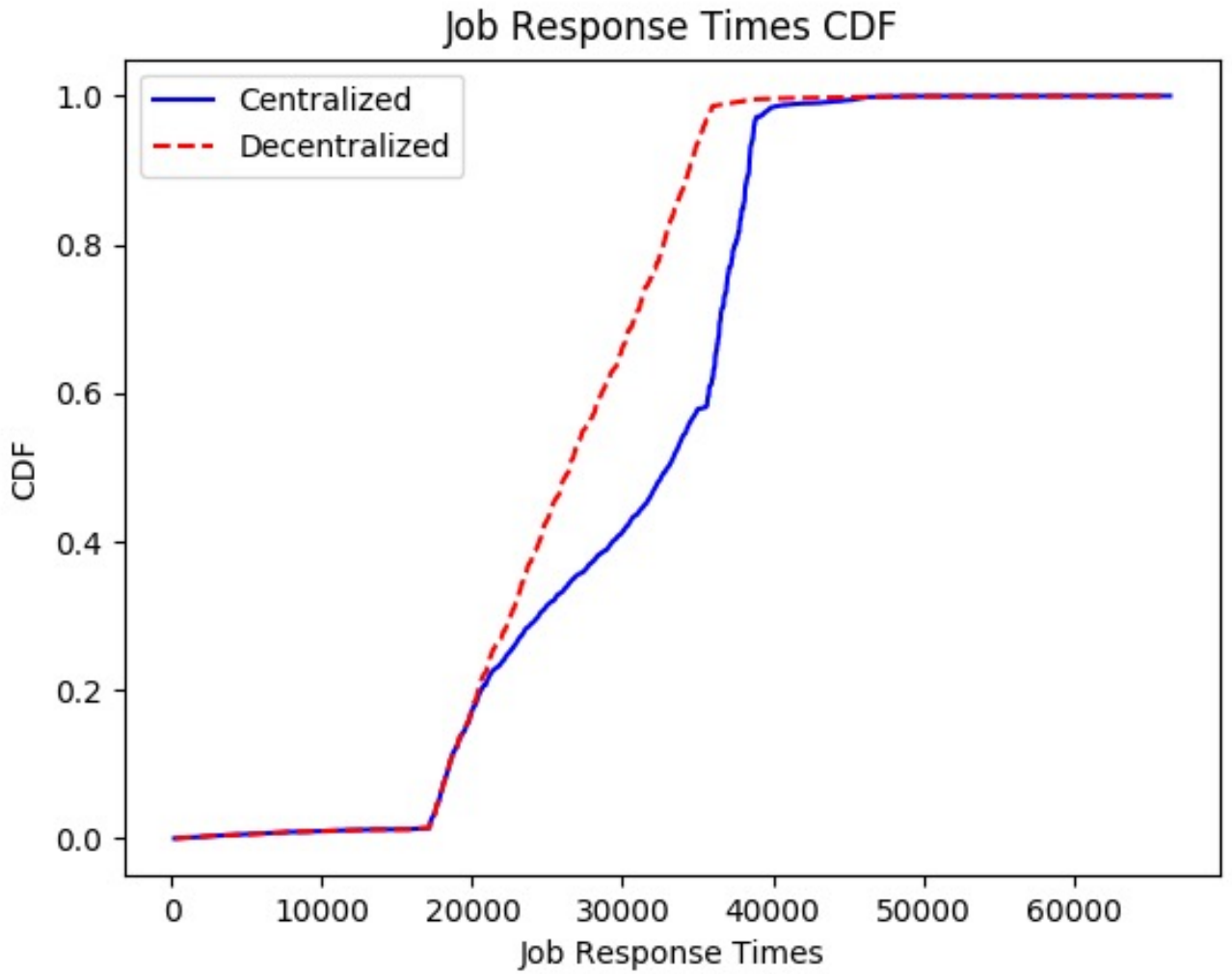
- Job Level Scheduling
- Estimate Worker Wait Times

Better Placement Quality

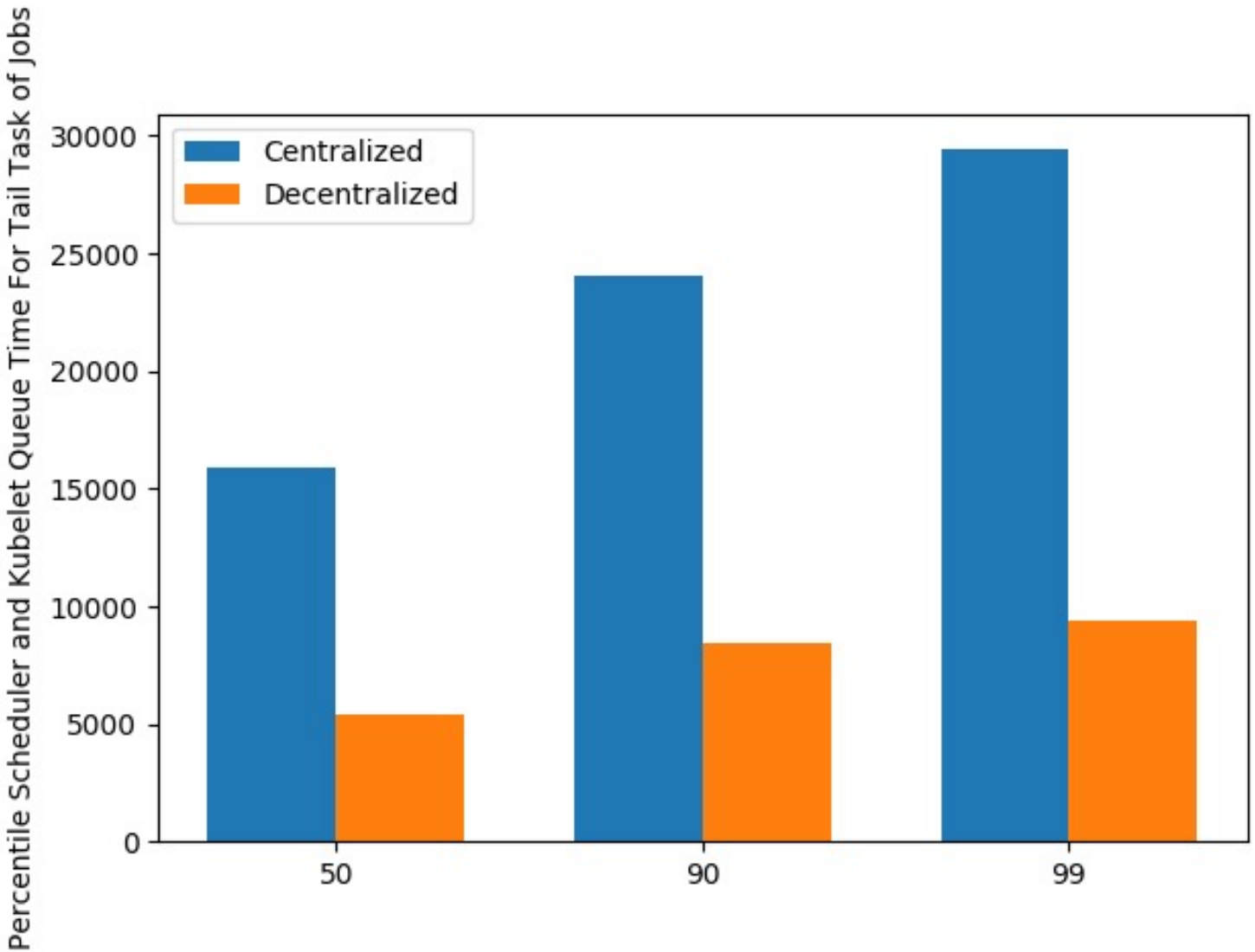
- Loosely coordinating schedulers

Scalability

Placement Quality



Tail Task Latencies



Conclusion

1. Presented drawbacks of centralized scheduling
   - Bottleneck single incoming job request queue
   - Large tail task latencies

2. Highlight the advantages of job level decentralized scheduling
   - Better overall job completion times
   - Shorter tail task queue times
   - Scalability