Towards Improved Cloud Function Scheduling in Function-as-a-Service Platforms

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Research: Distributed systems, key-value stores as cache, workload modeling, scheduling in serverless...
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- FaaS architectures are increasingly popular, but present several performance challenges time-sensitive services.
- Potential high latencies, derived from the initialization phase, make this architecture unsuitable for some use cases.
- Smart scheduling cloud functions, can improve performance in FaaS architectures
- By working on the scheduler I could:
  - Reduce function launch time by minimizing control plane and data plane communications?
  - Reconcile possibly conflicting goals of the function scheduling process? (e.g., balance worker load, maximize data locality, maximize code locality, meet QoS guarantees)
  - Allow the provider to offer differentiated services in terms of launch time latency?
Preliminary results: Improve function latency by increasing code locality

Results:

- Moderate improvements in hit rates of the package caches at the worker nodes. Our algorithm improves the average hit rate by actively seeking to improve package affinity.
- Median latency improves by 66.25%
- Tail latency improves by 38.6%
- Adds (manageable) node imbalance.

*Preliminary result presented at: HotCloudPerf Workshop @ ICPE 2018*
Questions?

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Thanks!