Serverless Supercomputing Demo 4

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From Last Time..

Release 4 (Due 03/16/18)

- Fix Implementation to scale efficiently
- Performance Evaluation
- Error Handling
- Finalize Application
- Run Application on MOC OS cluster
- Documentation

Client Side Error Handling

- JavaScript Promise rejection to handle error
- For response code other than “200”, the client should not crash and exit gracefully

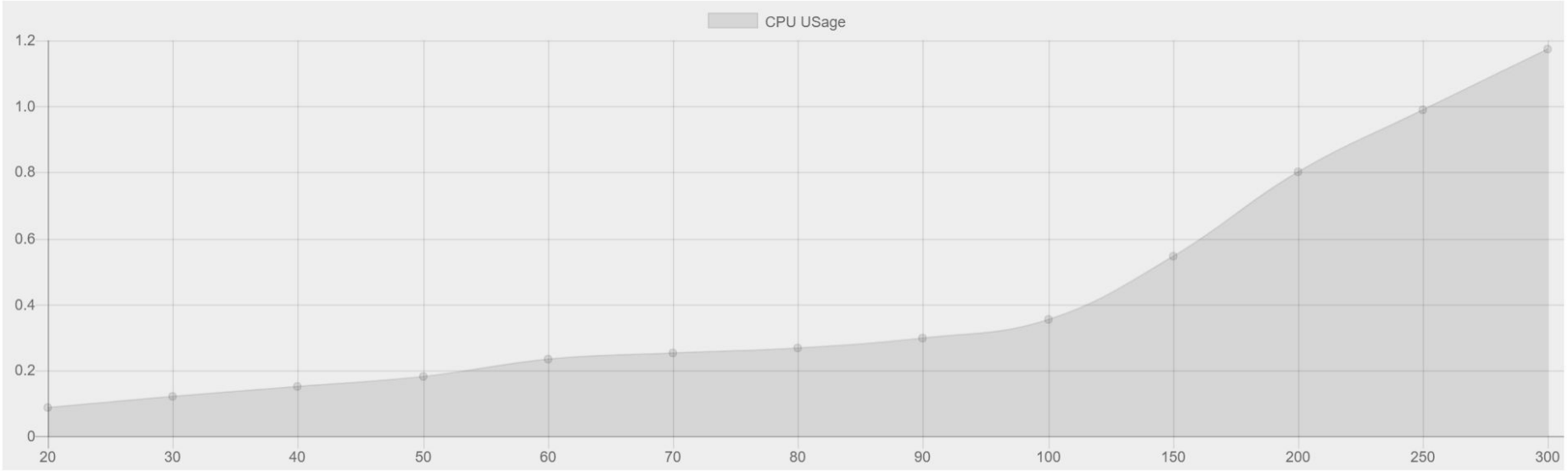
Fault Tolerance

When an invocation request is received, the system records the request and dispatches an activation. The system attempts to invoke the Action once, resulting in one of the following four outcomes:

- Success
- Application Error
- Action Developer Error
- Whisk Internal Error

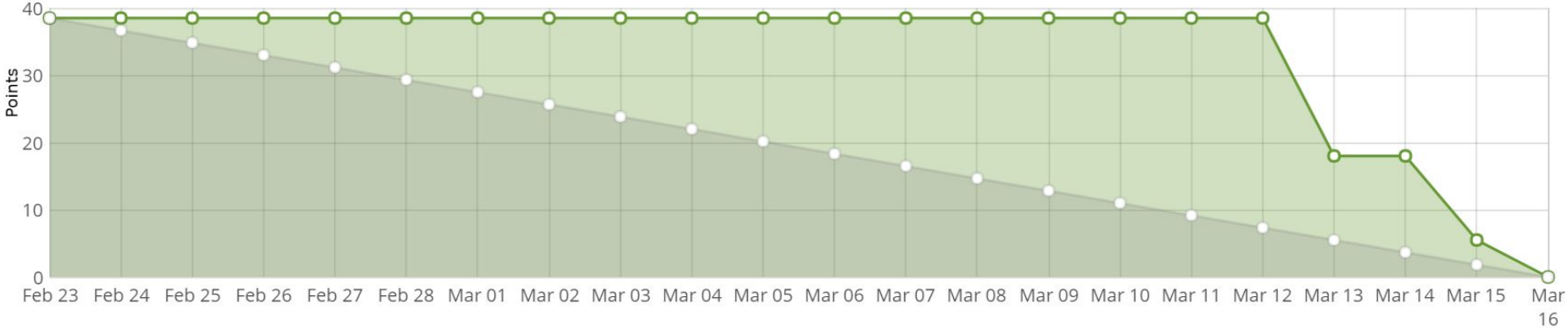
```
[fedora@p-serverless Serverless-Supercomputing]$ node orchestrator.js
Registering action on OpenWhisk
{"name":"testPoints","publish":false,"annotations":[{"key":"exec","value":"nodejs:6
arams.shouldFail) { throw 'I am failing'; }var numPoints = parseInt(params.numPoint
; randY = (Math.random() * 2) - 1; distFromCenter = Math.sqrt(randX * randX + randY
nCircle}; }","binary":false},"parameters":[],"limits":{"timeout":60000,"memory":256
Action Registered
Triggering Actions
Action started with id: b535e2ffce394ef5b5e2ffce394ef506
Getting result of action: b535e2ffce394ef5b5e2ffce394ef506
Action b535e2ffce394ef5b5e2ffce394ef506 failed, trying again
Action started with id: 7c8fa87f3a904f288fa87f3a900f28cb
Getting result of action: 7c8fa87f3a904f288fa87f3a900f28cb
Action 7c8fa87f3a904f288fa87f3a900f28cb hasn't finished yet... checking again.
Getting result of action: 7c8fa87f3a904f288fa87f3a900f28cb
Action 7c8fa87f3a904f288fa87f3a900f28cb hasn't finished yet... checking again.
Getting result of action: 7c8fa87f3a904f288fa87f3a900f28cb
Action 1 finished with {"inCircle":9}
9 out of 10 were in the circle.
Computed Value of Pi: 3.6
Finished in 21.563 seconds
```

Performance



Issues we found

- OpenWhisk may not be spinning up as many containers as it should
- CPU usage % is not ideal
- Insufficient resources in OS cluster



Release 5 (Due 03/30/2018)

- Test the application on OpenShift cluster on MoC
- Test the algorithm with scale and provide performance data of the results
- Orchestrate OpenWhisk to use multiple containers (ideally # of actions = # of containers)
- Analyse if the computation time decreases linearly and relative to the number of additional pods added
- Make orchestrator generic