Container Live Migration

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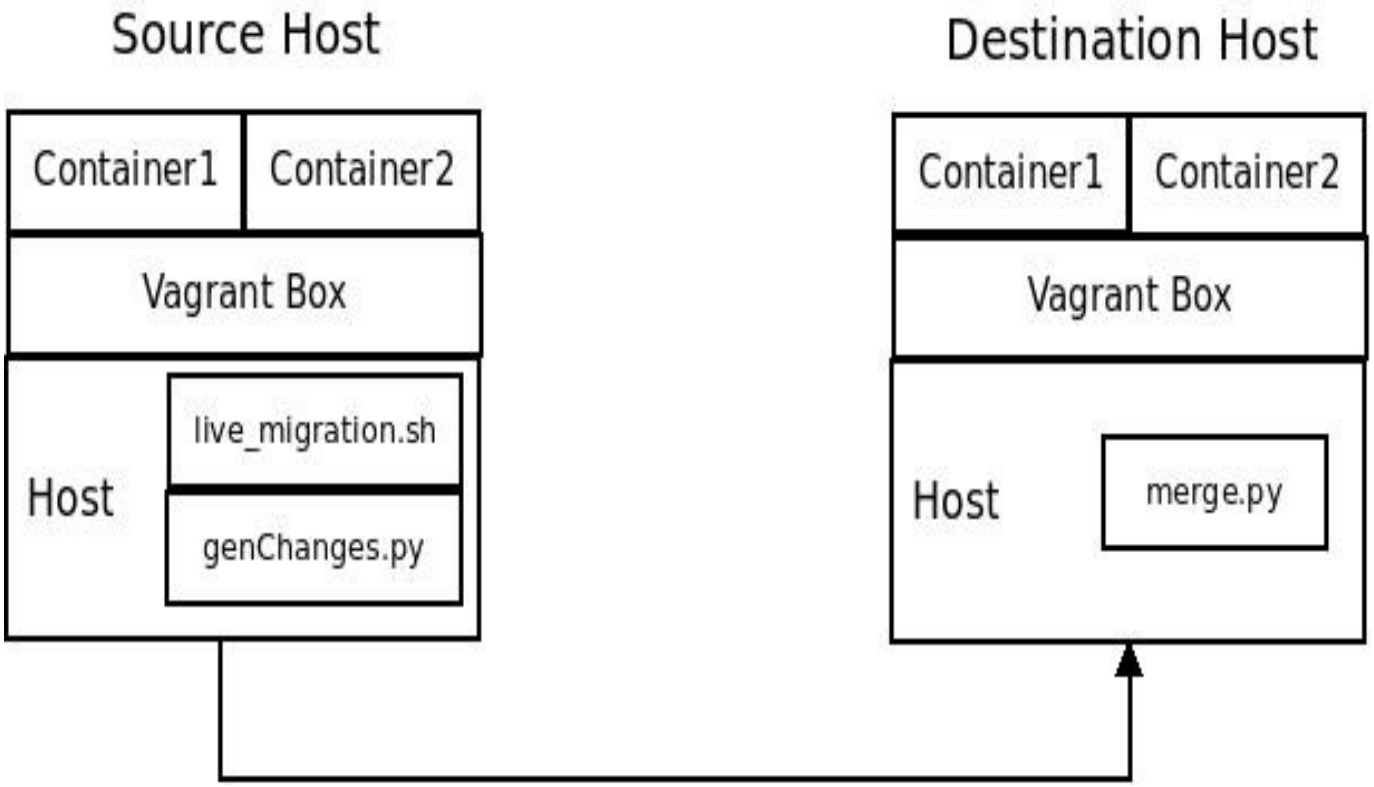
Project description

- What is Container?
- Light weight virtual environment
- LXC(Linux Container)
- Docker (https://www.docker.com/)
- Increasing popularity of these technologies need support for live migration.

Approach

- CRIU (https://criu.org/) used for checkpointing docker container
- Used experimental bundle of docker and CRIU in vagrant box (http://blog.circleci.com/checkpoint-and-restore-docker-container-with-criu/)
- Iterative migration strategy to minimize the downtime of container.

Implementation details



Implementation details

- Following are the main components of our solution:

1. Live-migration module
2. Changes Generator Module
3. Merge Module

- Live-migration and Changes Generator modules work at Source machine.
- Merge module works at destination machine.

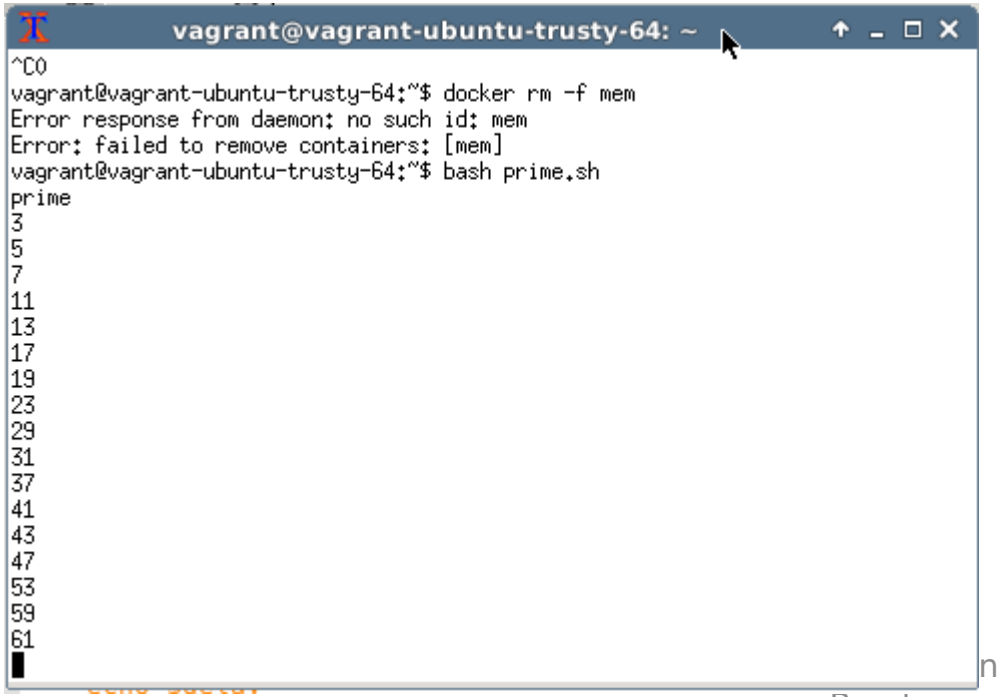
Experimental Evaluation

- We consider following two questions:

1) Correctness

2) Sensitivity analysis

- Correctness: Tested using natural numbers generator, fibonacii series generator, prime number generator.

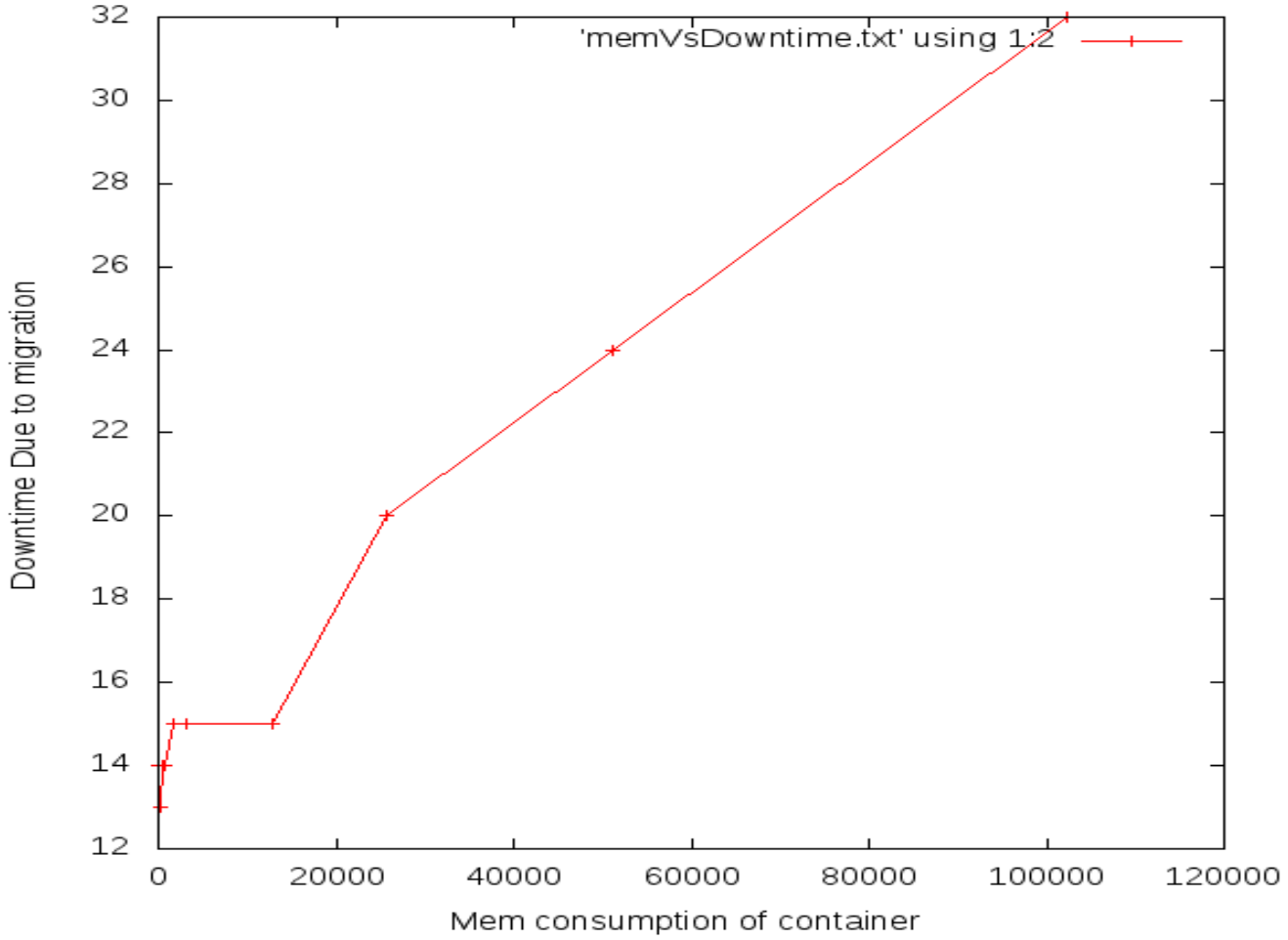



```
vagrant@vagrant-ubuntu-trusty-64:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED
vagrant@vagrant-ubuntu-trusty-64:~$ docker logs -f prime
67
71
73
79
83
89
97
```

Experimental Evaluation

- Sensitivity analysis:

1. Memory consumption vs Migration Downtime



Experimental Evaluation

- Sensitivity analysis:

  2. Memory access speed vs Migration Downtime