Large-scale distributed computing SS2013
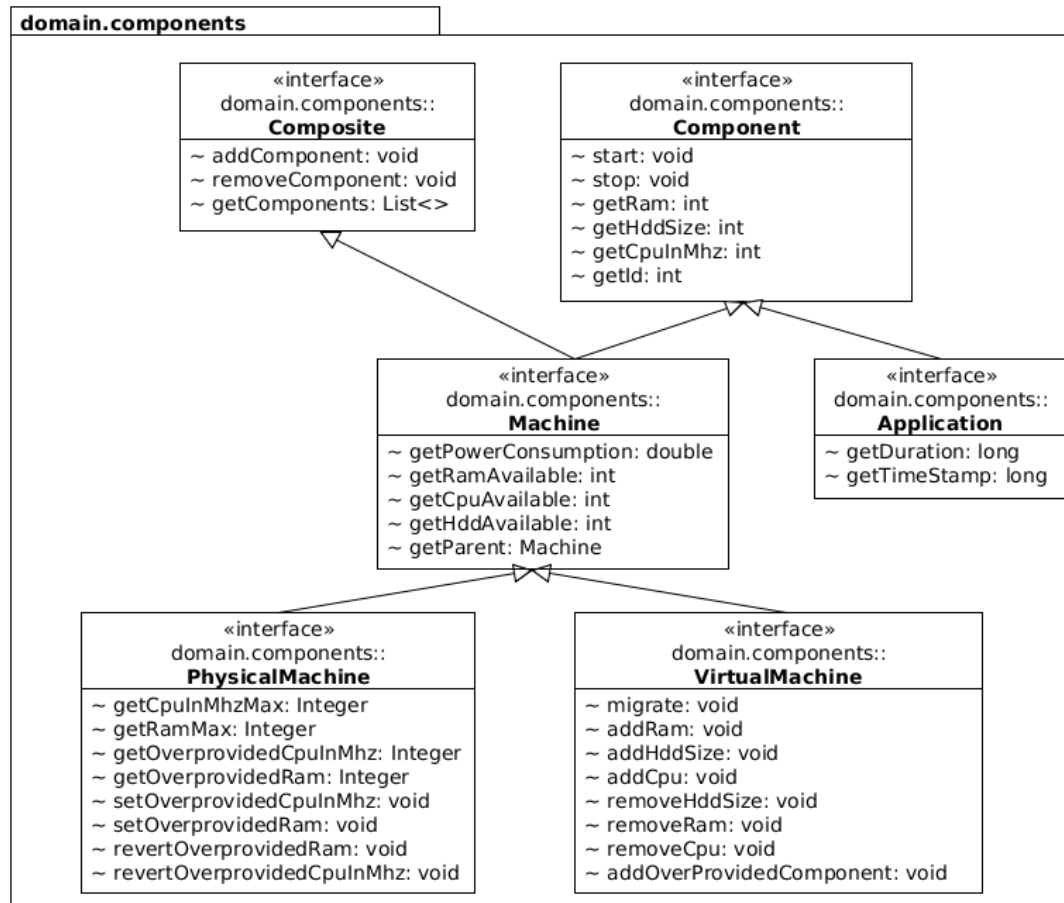
Presentation of the mid term results

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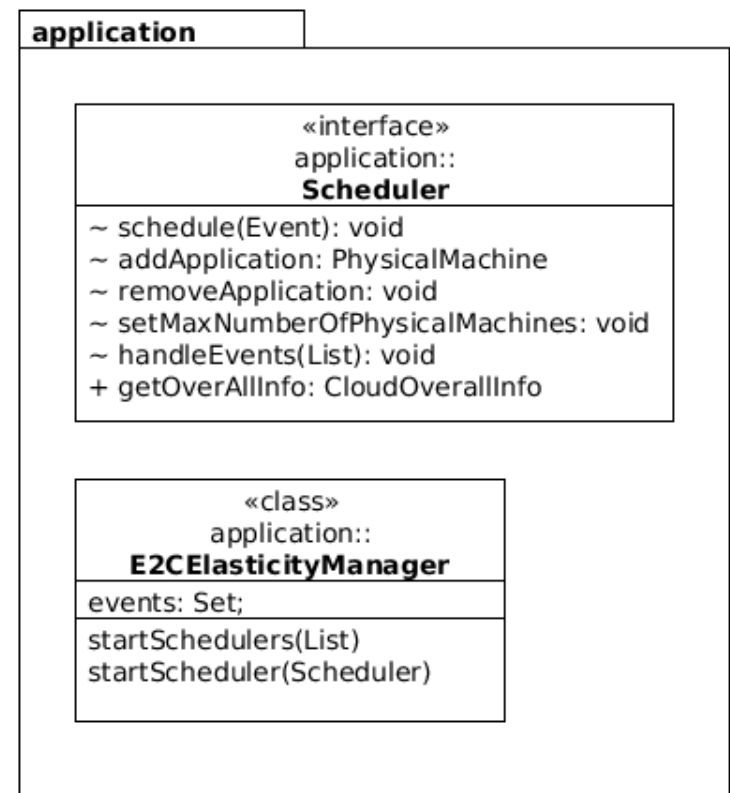Kung Wong 0625998

Architecture

- Layered Architecture
  - Domain Logic (VM, PM, Application)
  - Application Logic (Scheduler A-C)
- Spring Application Context
  - Dependency Injection for Csv{Parser,Writer} and Schedulers
- Unit Tests
  - Domain Logic
  - Schedulers

Interfaces

Application

- Elasticity Manager loads Applications and invokes Schedulers
- Schedulers keep track of internal time as it starts and stops Applications

application

«interface»
application::
Scheduler

~ schedule(Event): void
~ addApplication: PhysicalMachine
~ removeApplication: void
~ setMaxNumberOfPhysicalMachines: void
~ handleEvents(List): void
+ getOverAllInfo: CloudOverallInfo

«class»
application::
E2CElasticityManager

events: Set;

startSchedulers(List)
startScheduler(Scheduler)

Scheduler C

- Scheduler C uses overcommitting for CPU and RAM resources of PMs
- Applications on overcommitted PMs are slowed down by the ratio of overcommitted resources
- We define a threshold how much we can overcommit (15 % - chosen arbitrarily)
- We optimize RAM-to-CPU utilization in PMs
- We calculate a penalty to delay the application stop events for each overcommitted PM
- When a stop event is handled and a penalty exists, the event is rescheduled

Open Tasks

- Finish implementation of schedulers

- Federation

- Test schedulers with several input scenarios

- Datastructure optimizations

Live Demo