

Elasticity Testing of Cloud Computing System

Michel Albonico

PhD Student - AtlanMod - EMN (Nantes, France)

michelalbonico@utfpr.edu.br

Jean-Marie Mottu

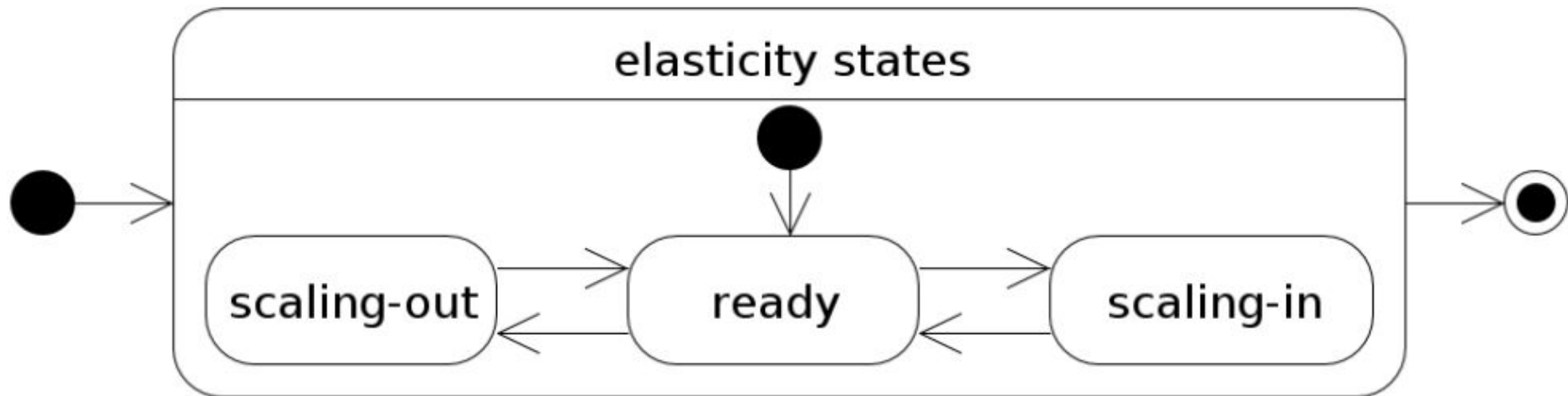
Gerson Sunyé

Topics

- Elasticity State-based Testing
- Generation of Testing (Re-)Configuration
- Ongoing Work
 - Elasticity/Auto-Scaling Controller for Testing
 - DSL-based Orchestration

Elasticity State-based Testing

- Elasticity states transition.

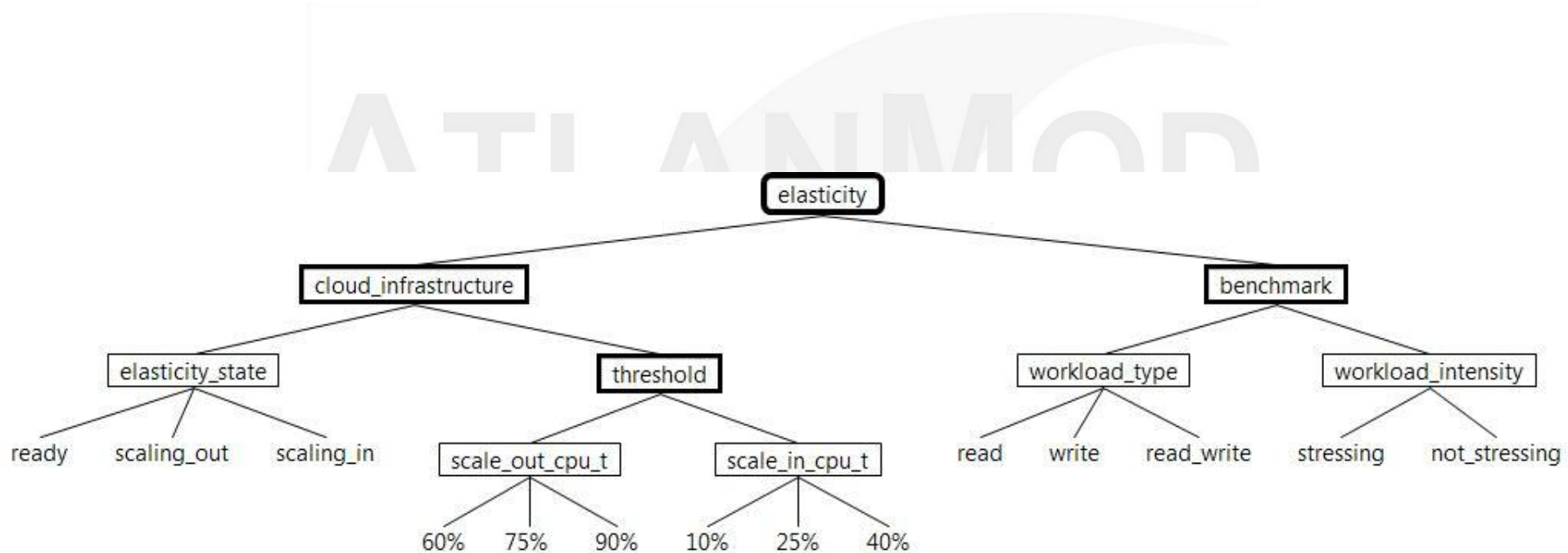


Elasticity State-based Testing

- Cloud system driving:
 - **Required** elasticity states;
 - Deterministic workload variation.
- Elasticity testing execution:
 - Dynamic test case execution: according to elasticity state;
 - Elasticity states monitoring in real time;
 - Switch among test cases, according to current elasticity state.

Generation of Testing (Re-)Configuration


- Testing configuration:
 - elasticity state, threshold setting, workload type, etc.
- Large amount of combinations;
- Which one should we choose?



Generation of Testing (Re-)Configuration

- Combinatorial testing:
 - Pairwise combination = list of configurations (2-C);
 - Permutation of 2-C configurations = re-configurations (2-R);
 - $\text{conf1} \Rightarrow \text{conf2} \Rightarrow \text{conf3}$ (“hot-swapping”).

In progress:

- Comparison with 3-wise (**performance testing**):
 - Time consuming (~6 days for 1 test execution) compared to 2-wise (~5 hours); 
 - We're still checking about additional performance issues;
 - Preliminary analysis:
 - It seems to not reveal considerable additional issues.

Ongoing Work

- Elasticity/auto-scaling controller for testing:
 - Test execution “acceleration”;
 - Selective elasticity.
- DSL-based orchestration:
 - Deployment;
 - Elasticity setting;
 - Required elasticity behavior;
 - Test case writing;
 - ...

Elasticity Testing of Cloud Computing System

Michel Albonico

PhD Student - AtlanMod - EMN (Nantes, France)

michelalbonico@utfpr.edu.br

Jean-Marie Mottu

Gerson Sunyé