Analyzing Cost-Efficiency of Cloud Computing Applications with SimuLizar

Sebastian Lehrig, Hendrik Eikerling
Motivation

“How can I operate more cost efficiently?”

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“Cloud Computing!”

“How can I operate more cost efficiently?”

“Cloud Computing!”

Resource Demand

Provisioned Resources

Bookstore Owner

Software Architect

Motivation

November 5th, 2015

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Motivation

“See, more cost efficient!”

“How much will it cost exactly?”

“Mhh... How many instances do I need?”

How to estimate number of required resources accurately?

Bookstore Owner

Software Architect

Educated guess?

Past experience?

Resources

Time

Provisioned Resources

Resource Demand

November 5th, 2015

Analyzing Cost-Efficiency of Cloud Computing Applications in SimuLizar
Estimating Cost in Cloud Computing

Idea:
Model

→ Action:
Define metrics & integrate into SimuLizar

Operation Cost

Response Time

Time

Simulate
Adapt

→ Action:
Define metrics & integrate into SimuLizar

CloudScale

November 5th, 2015

Analyzing Cost-Efficiency of Cloud Computing Applications in SimuLizar
Measuring Cost

- Normal: 5€/h
- Load Balancer: 0€/h
- Replicable: 10€/h

Report Every: 3h
Estimating Cost in Cloud Computing

Idea:
- Model
- Simulate
- Adapt

Operation Cost
- Response Time
- Time

November 5th, 2015
Analyzing Cost-Efficiency of Cloud Computing Applications in SimuLizar
Measuring Cost

Normal: 5€/h
Load Balancer: 0€/h
Replicable: 10€/h

Operation Cost [€]

Simulation Time [h]

Report Every: 3h

45€ 75€ 105€ 85€ 75€ 45€
Evaluating Cost in Cloud Computing

Bookstore Owner

“Nice, but how cost efficient can we make it?”

Idea:

Future work:
- Self adaptation based on cost
- Cost limit
- Cost/response time tradeoff
- Evolving cost model

Software Architect

“Compare Alternatives!”

Analyzing Cost-Efficiency of Cloud Computing Applications in SimuLizar

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Literature


Literature

The palladio component model for model-driven performance prediction. 

Accessed: 10/20/2015.

Automatically improve software architecture models for performance, reliability, and cost using evolutionary algorithms. 

The NIST definition of cloud computing. 