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Using SLA to guide software migration to the cloud: An empirical study

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Agenda

- Introduction(Cloud Computing, Polyglot Persistence, Systematic Mappings, SLAs)
- Systematic Mapping
- The problem
- The solution
- Roadmap
- Schedule

Introduction

- Storytelling
    - Cloud Computing
    - Polyglot Persistence
    - SLAs
    - Systematic Mappings

Systematic Mapping

- Objective: assess the use of SLAs in database transition scenarios, specifically on migrations from relational databases with NoSQL ones;

- 47 publications -> 3 migration experiment reports;

Systematic Mapping

- Questions:
    - What are the reasons to change from RDBMSs to NoSQL solutions?
    - How can we measure the overall improvements promised by this change?
    - Is there a standard representation of SLAs in cloud services?

The problem

- No publication was found addressing the problem of measuring the overall improvements after a database transition.

- The systematic mapping revealed no open source solution to monitor Application SLAs in a user-centered view (application level)

The Solution

- Assess the use of a SLA-Guided process to support the migration/replacement of relational databases with NoSQL ones.

- This process will be developed and assessed with case studies.

Step 1

Phase	Title	Description
1	Identification of Case Studies & SLAs	On this step we aim to identify examples where a Database transition is needed or recommended in order to satisfy a SLA. We will try to work on production-ready and open-source softwares. If the complexity of these projects is too large for our scope, we will design and develop our own scenarios.

Step 2

2	Plan	After the scenarios have been identified, we will propose architectural changes that could satisfy the SLA. These changes will be proposed by literature reviews and survey of industry experts.

Step 3

3	Do	On this step we implement the architecture proposed on the previous step.

Step 4

4	Check	On the check step we will verify if the proposed architecture and implementation satisfies the SLAs identified on the first step.

Step 5

5	Act	Tweaks can be needed on the proposed architecture and implementation if the SLA is still not satisfied by the changes made on the previous step. On the act phase we investigate what else can be done to satisfy the SLA and refine the process defined on step 2.

Step 6

6	Final Results	On the final step we aim to publish the results of our work on relevant database-related conferences and workshops.

The Roadmap

A	B	C	D	E	F	G	H	I	J
Phase	Step Description	25/07/2015	15/08/2015	5/9/2015	26/09/2015	17/10/2015	7/11/2015	28/11/2015	19/12/2015
	Scenario identification / Implementation	x							
	Identification of broken SLAs		x						
	Implementation of "runnable SLAs"		x						
Phase 1	Execution reports		x						
	Literature Review for each scenario			x					
Phase 2	Survey of industry experts			x					
	Planning of changes			x					
Phase 3	Implementation			x	x	x			
	New Execution Reports					x			
Phase 4	Comparison of Results					x			
Phase 5	Tweaks on the proposed architecture					x	x		
	Publish the results						x	x	x
Phase 6	Write the final results						x	x	x

Dúvidas

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