Thesis

MSc in Informatics Engineering

Entermediate Report

Relatório de estágio

Avaliação da Robustez de Plataformas Cloud

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Dedication

Acknowledgements

I would like to thank to —— and to professors Raul Barbosa and Henrique Madeira, who are role models, by their support and help to take good decisions.

Thank my girlfriend for their support, undestanding and the company along this path. At my friends and colleagues of Department of Informatics Engineering the pacience, suport and for all times they have given me.

Last but certainly not least, I would like to thank my family for encouragement, love and all the unconditional and constant support that led me to fulfill this dream. Obrigado!

Gonçalo Silva Pereira

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Abbreviations

Abstract

The theme of the dissertation is “Evaluate the robusteness of Cloud”.

Keywords: Faults, Errors, Failures, Vulnerabilities, Fault Injection, Fault Tolerance, Security, Robustness.

1 Introduction

1.1 Contextualization

The present dissertation describe the work developed in scope of MSc in Informatics Engineering. It is focused in "Evaluate the robusteness of Cloud" and this is one subject very important of nowadays, because of the increase usage of clouding services. This services are characterized by the placement of data and software on remote infrastructure. Despite of the numerous benefits, the reliability of these platforms has not kept the needs, and users trust their applications to systems outside of personal control.

In this context, naturally arises the problem of confidence in the entity that manages the platform where applications have been executed. Any organization that put an application in the cloud (for example, Microsoft Azure or Amazon EC2) will have to accept the assurances given by the service provider.

This internship deals with the challenge of assessing the robustness of cloud platforms. The computing service provider uses virtualization to manage and allocate computing power to meet actual needs of the application. Although, there are solid virtualization platforms, fault tolerance is still a research problem.

1.1.1 The project

1.2 Objectives

1.3 Struture of report

1.4 Management

In this section is described the planning of work developed in stage.

1.4.1 Meetings

In relation a meetings, the supervisor Raul Barbosa and me agreed that meet weekly was the best option. And the meetings were going on, with one or another change of schedule to reconcile with the other activities of both. In addition, I went to several general meeting of the project. Where could discuss concepts and the direction of the project with colleagues and teachers, among them: Raul Barbosa (supervisor), Henrique Madeira (co-supervisor), João Durães and João André Ferro.

1.4.2 Risks

The main-risks of execution of this project are:

- Equipment Failure
- Data lost
- Publication of similar research
- Personal issues interfere with progress
- Student loses interest
- Dispute between student and supervisor
- Supervisor takes excessive time to check final drafts
- Student wants to submit thesis without supervisor approval

Table of risks with cause, consequence and mitigation!!!

1.4.3 Planning and Tracking

Planning and Tracking
In appendix A, is presented the gantt with the planning tasks that ...
I have prioritized the tasks using the nomenclature in Table 1:
What is the requirements of this project???

Classification	Mean
Must	Must be implement at project finish, and his implementation is priority.
Nice	May be part of the functionality implemented at the end of project, and his implementation is optional.
Wishful	It's specified but his implementation is not expected until the end of project.

Table 1: Classification of requirements

2 State of the Art

Nowadays, people use lot's of services based in cloud and lot's of companies choose to use them too.

Because, using it, companies reduce the costs of IT infraestructure and people don't buy "physical storage" and don't care where are the data. The cloud service provide that the data is secure. But, like any system, the cloud have problems such as another computer systems, software and hardware faults. And the resilience of the cloud is an important caracteristic.

The increased use of cloud is related with a low usage of many dedicated servers, and their migration

With this work, I want to inject software faults and analyse how the system react to them.

A lot of studies show that the software faults it's the main cause of computer failures.

In this work deliberate how

[1] [2] [3]

3 Research objectives and approach method

3.1 Cloud Computing

4 Current work and preliminary results

5 Work plan and implications

6 Conclusion

6.1 Global Vision

Global Vision

6.2 Future Work

Future Work

A Appendix A - Gantt diagram

Gantt diagram

References

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[3] Algirdas Avizzienis, Jean-Claude Laprie, Brian Randell, and Carl Landwehr. Basic concepts and taxonomy of dependable and secure computing.