A new Framework to enable rapid innovation in Cloud Datacenter through a SDN approach.

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Acknowledgments

I would like...

I also...

Abstract

In the last years, the widespread of Cloud computing as the main paradigm to deliver a large plethora of virtualized services significantly increased the complexity of Datacenters management and raised new performance issues for the intra-Datacenter network. Providing heterogeneous services and satisfying userś experience is really challenging for Cloud service providers, since system (IT resources) and network administration functions are definitely separated. In this scenario, a recent approach to programmable networks (i.e., Software-Defined Networking - SDN) seems to be a promising way to satisfy DC network requirements[7]. SDN based architecture decouples control and data planes: the most deployed SDN protocol is OpenFlow (OF)[9][8], which allows to set into OF compliant switches forwarding rules established by a centralized intelligence called controller.

Since SDN allows to re-define and re-configure network functionalities (possibly up to the physical layer), the basic idea is to introduce a new framework that allows to develop and test new OpenFlowbased controllers for Cloud Datacenters and also new policies that enables a more efficient, agile, scalable and simple use of both VMs and network resources. Fix REFERENCES

Contents

List of Acronyms

	...
DSCP	Diffserv Code Point
	....
IP	Internet Protocol
	...

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Chapter 1

Introduction

1.1 Introduction

- DataCenter
- Cloud
- Cloud DataCenter
- SDN - Software define Networks
- Openflow
- ...

1.2 Motivation and objectives

- Understanding the basic features of SDN paradigm
- Studying the problematics in cloud DC VM allocations
- Apply the SDN paradigm to better exploit the DC resources
- Develop a framework for Cloud Datacenter emulation and new VM allocation policies
- ...

1.3 Dissertation layout

In the present Chapter 1 - ...

Chapter 2

State of art

Usually background and related work ...

2.1 Available solutions

Write something generic

2.1.1 CloudSim

2.1.2 NetFPGA Emulation

2.1.3 Meridian

2.1.4 Networkcloudsim

2.1.5 Greencloud

2.1.6 icancloud

2.2 Virtual Machine Allocation Policies

Chapter 3

Architecture and design

Conceptual view and architecture of the proposed solution (implementation details can go into a different chapter, if required)...

3.1 Framework architecture

Generically talk about the architecture...

3.2 Framework modules: Mininet

3.2.1 Topology Generator

3.2.2 Traffic Generator

Describe each module, it's functionalities, limitations, how it can be used/improved (improved if the user wants to add new features)

- Talk generally about the traffic generator

- Talk about the one's we tried (pros and cons)

3.3 Framework modules: Controller

Describe each module, it's functionalities, limitations, how it can be used/improved (improved if the user wants to add new features)

3.3.1 Topology Discovery

3.3.2 OF Rules Handler

3.3.3 Statistics Handler

3.3.4 VM Request Handler

3.3.5 VMM - Virtual Machines Manager

3.3.6 Network Traffic Requester

3.3.7 POX Modules

3.3.8 User Defined Logic

3.4 Framework modules: Web Platform

Describe each module, it’s functionalities, limitations, how it can be used/improved (improved if the user wants to add new features)

3.5 Framework modules: VM Requester

Describe each module, it's functionalities, limitations, how it can be used/improved (improved if the user wants to add new features)

3.6 Using the framework

3.6.1 Emulator

Describe how to use the framework (emulation part) and how to access the API..

3.6.2 Real Environment

Describe what changes in the real environment (the modules that are disabled and the ones that need to be enabled)

Chapter 4

Framework extensions

4.1 Enabling QoS

4.1.1 State of art: QoS in SDN

4.1.2 QoS in the framework

4.2 Enabling Virtual Machine migration

4.2.1 State of art: Virtual Machine Migration Policies

4.2.2 Virtual Machine migration in the framework

Chapter 5

Validation and tests

Usually test and validation of the proposed solution ...

5.1 Framework Validation

- Show how Bf goes against WF with server driven algorithm (show server occupation)
- Show how Bf goes against WF with network driven algorithm (show network occupation) (although the behaviour is similar is allow to say that net algorithm may use switch statistics)

5.2 Performance Evaluation

Get the tests from the submitted paper.

5.3 Real environment tests

- Talk about the environment which was setup
  - Chosen hypervisor
  - Talk about Xen api and the alternative solution (ssh each server and run a script to clone the vm)
  - OpenVswitches VS NetFPGA problems
  -

5.4 Migration test

Should they be included here or on the section "Enabling Virtual MAchine migration"?

Chapter 6

Conclusions

This chapter provides ...

6.1 Main contributions

6.2 Future work

Appendix A

Name of the Appendix

Bibliography