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Openstack

Cloud Application Development

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OpenStack® Cloud Application Development

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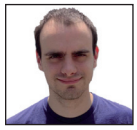

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—Scott Adkins

I would like to thank my wife and children for their support and encouragement throughout this project.

—John Belamaric

I would like to thank the entire team, who helped me to complete this project and gave the appropriate level of support, and my family, who helped me to stay focused on this book.

—Denys Makogon

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—Jason Robinson

CONTENTS

INTRODUCTION *xi*

PART I: OPENSTACK OVERVIEW

CHAPTER 1: INTRODUCING OPENSTACK 3

What Is Cloud Computing? 3
Why Should I Care? 6
Understanding the Architecture 13
Summary 18

CHAPTER 2: UNDERSTANDING THE OPENSTACK ECOSYSTEM: CORE PROJECTS 19

Identity 20
Compute 24
Storage 28
Imaging 34
Dashboard 37
Networking 38
Bringing It All Together 45
Summary 48

CHAPTER 3: UNDERSTANDING THE OPENSTACK ECOSYSTEM: ADDITIONAL PROJECTS 49

OpenStack Heat 50
OpenStack Database as a Service: Trove 54
Designate: DNS as a Service 62
Magnum 67
Murano: Application as a Service 70
Ceilometer: Telemetry as a Service 75
Summary 76

PART II: DEVELOPING AND DEPLOYING APPLICATIONS WITH OPENSTACK

CHAPTER 4: APPLICATION DEVELOPMENT 79

Converting a Legacy App to an OpenStack App 79
Building Apps from Scratch 83
OpenStack App Description and Deployment Strategies 87
Summary 92

CHAPTER 5: IMPROVING ON THE APPLICATION 93

Failure Scenarios 94
Hostname and IP Addressing 99
Scaling 103
Improving Our Application 111
Summary 119

CHAPTER 6: DEPLOYING THE APPLICATION 121

Bare Metal, Virtual Machines, and Containers 122
Orchestration and Configuration Management 127
Monitoring and Metering 136
Elasticity 137
Updating and Patching 147
Summary 149
Book Wrap Up 149

INDEX *151*

INTRODUCTION

OPENSTACK IS A SET OF SOFTWARE PACKAGES THAT MANAGE virtualized resources, including computing, networking, and storage. It enables you to create and destroy virtual machines, connect them together with private networks, provide network-based storage, and make them available to the rest of your network and the world. OpenStack provides consistent, uniform API services for all of this, hiding hypervisor and vendor specific details from the applications that are using the APIs. It also provides a user interface, built on top of the same APIs, that allows users to see and manage their virtual resources.

WHO THIS BOOK IS FOR

This book is for application developers that are interested in learning more about OpenStack and how it will transform the application design and development process. It is for someone who is new to the cloud environment, who wants a broad understanding of that environment, as well as a deep enough knowledge to make practical use of OpenStack.

WHAT THIS BOOK COVERS

This book will provide a broad understanding of cloud concepts and how they fit into the life of an application developer. It will drill in deeply to the OpenStack services that are most important to an application developer, and show you how these services will change not only how you deploy applications, but also how you design them. It will provide detailed information on each service, and provide examples of how each service may be used by an application developer.

HOW THIS BOOK IS STRUCTURED

This book was written in two parts. Part 1 provides an overview of OpenStack. The purpose of this part is to lay the groundwork, covering all of the OpenStack technologies and what is most important.

Part 2 takes the reader through developing and deploying applications with OpenStack. In this part you will build an example on top of OpenStack that drills down much deeper on the technologies, provides tips, and helps you learn about OpenStack through the lens of these same technologies.

Here is a list of the chapters:

- Part I: OpenStack Overview
  - Chapter 1: Introduction to OpenStack
  - Chapter 2: Understanding the OpenStack Ecosystem: Core Projects
  - Chapter 3: Understanding the OpenStack Ecosystem: Additional Projects

- Part II: Developing and Deploying Applications with OpenStack
  - Chapter 4: Application Development
  - Chapter 5: Improving on the Application
  - Chapter 6: Deploying the Application

WHAT YOU NEED TO USE THIS BOOK

You should understand the basics of application development - how applications are composed of multiple servers like web servers, application servers, and database servers. You do not need any cloud-specific knowledge, though you should be aware of what virtualization and virtual machines are, and have a basic understanding of networks.

CONVENTIONS

To help you get the most from the text and keep track of what's happening, we've used a number of conventions throughout the book.

Examples that you can download and try out for yourself generally appear in a box like this:

EXAMPLE TITLE

This section gives a brief overview of the example.

Source

This section includes the source code.

```
Source code
Source code
Source code
```

Output

This section lists the output:

```
Example output
Example output
Example output
```

NOTE *Notes indicates notes, tips, hints, tricks, or and asides to the current discussion.*

As for styles in the text:

- *We* highlight *new terms and important words when we introduce them.*
- *We show code within the text like so:* `persistence.properties`.

SOURCE CODE

As you work through the examples in this book, you may choose either to type in all the code manually, or to use the source code files that accompany the book. All the source code used in this book is available for download at `www.wrox.com`. Specifically for this book, the code download is on the Download Code tab at:

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PART I
OpenStack Overview

- **CHAPTER 1:** Introducing OpenStack
- **CHAPTER 2:** Understanding the OpenStack Ecosystem: Core Projects
- **CHAPTER 3:** Understanding the OpenStack Ecosystem: Additional Projects