Full Stack Python Guide to Deployments

by Matthew Makai



Table of Contents

Chapter	1:	Introduction 8		
		1.1	Who This Book Is For	10
		1.2	Our Deployment	10
		1.3	Deployment Automation	12
		1.4	How to Use this Book	14
		1.5	Services We'll Use	14
		1.6	Our Example WSGI Application	15
		1.7	Ready for Server Setup	16
Chapter	2:	Serve	rs	17
		2.1	Hosting Options	19
		2.2	What are Virtualized Servers?	20
		2.3	Obtain your Virtual Server	21
		2.4	Create Public and Private Keys	27
		2.5	Boot the Server and Secure It	29
		2.6	Upload the Public Key	34
		2.7	Restart the SSH Service	35
		2.8	Automating Server Setup	36
		2.9	Next: Operating System	40
Chapter	3:	0pera	ting Systems	41
		3.1	Ubuntu	43
		3.2	Installing Ubuntu Packages	44
		3.3	Enable the Firewall	45
		3.4	Ansible	46
		3.5	Automating Operating System Setup	46
		3.6	Next: Web Server	50
Chapter	4:	Web S	ervers	52
		4.1	Web Servers in Our Deployment	54
		4.2	Visualizing our Web Server's Purpose	55
		4.3	Nginx	56
		4.4	Installing Nginx	57
		4.5	Domain Name Service Resolution	57
		4.6	Configure Nginx Without HTTPS	61
		4.7	Create an SSL Certificate	63
		4.8	Install SSL Certificates	65
		4.0	Configure Nainy with UTTPS	67

		4.10	Restarting Nginx	69
		4.11	Automating the Nginx Configuration	69
		4.12	Next: Source Control	75
Chapter	5:	Sour	ce Control	77
		5.1	Hosted Source Control Services	80
		5.2	Creating a Deploy Key	80
		5.3	Authorizing Git Clone Access	81
		5.4	Pulling Project Code to the Server	84
		5.5	Automating Source Control	86
		5.6	Next: Databases	87
Chapter	6:	Datal	pases	. 89
		6.1	Databases in Our Deployment	91
		6.2	PostgreSQL	92
		6.3	Installing PostgreSQL	92
		6.4	NoSQL Data Stores	94
		6.5	Redis	95
		6.6	Installing Redis	95
		6.7	Testing the Redis Installation	95
		6.8	Automating the PostgreSQL and Redis Installations	97
		6.9	Next: Application Dependencies	99
Chapter	7:	Appl:	ication Dependencies	102
		7.1	Application Dependencies in Our Deployment	104
		7.2	Isolating Dependencies	105
		7.3	Storing Dependencies in requirements.txt	105
		7.4	Creating Our Virtualenv	106
		7.5	Installing Dependencies	107
		7.6	Syncing the Database Schema	109
		7.7	Populating Our Application's Initial Data	109
		7.8	Automating App Dependency Installation	110
		7.9	Next: WSGI Server	114
Chapter	8:	WSGI	Servers	116
		8.1	What is WSGI?	118
		8.2	WSGI Server Implementations	119
		8.3	Configuring Green Unicorn	120
		8.4	Starting Gunicorn with Supervisor	121
		8.5	Our App is Live!	122
		8.6	Automating Gunicorn Setup	122
		8.7	Next: Task Queue	124
Chapter	9:	Task	Queues	126
		9.1	What Are Task Queues For?	128
		9.2	Task Queue Implementations	129
		9.3	Configuring Celery	130

	9.4	Automating Celery Installation	131			
	9.5	Next: Continuous Integration	136			
Chapter 10:	Continuous Integration					
	10.1	How Will We Use Continuous Integration?	140			
	10.2	Setting Up Continuous Integration	141			
	10.3	Provisioning a New Server	142			
	10.4	Tweaking Our Ansible Automation	144			
	10.5	Jenkins Package Installation	147			
	10.6	Securing Jenkins with Authentication	149			
	10.7	Creating a CI Deploy Key	155			
	10.8	Creating Our Jenkins Build Job	159			
	10.9	Go Ahead, Push Some New Code	162			
	10.10	Next Steps	163			
	10.11	Other Open Source CI Projects	163			
	10.12	Hosted CI Services	164			
Chapter 11:	What'	s Next?	166			
	11.1	Deployment Enhancements	167			
	11.2	Improving Performance	168			
	11.3	Onward!	168			
	Glossary					
Appendix B:	More	More Python Resources				
Annendix C:	Flask	Application Code Tutorial	183			