Web Platform for Digital Deployment of Virtual Servers

About

Allow people to easily deploy servers and monitor their performance through a web interface

Aims

Give developers a platform for easy deployment, management and monitoring of virtual servers

Objectives

provide a platform that makes it more convenient to manage the following from a web interface

1. Deploy a virtual machine of the user's choice quickly by filling minimal amount of details
2. Configure firewall settings
3. Allow console access (Set up authentication credentials (SSH keys) for your instances)
4. Monitor disk/cpu usage of your virtual instances

Features

1. Allow system administrators to easily deploy variety of Linux machines through a click/select interfaces (free distriutions)
   - arch, fedora, Ubuntu, centos
2. Allow system administrators to customize the install of the systems by allowing them to choose the packages they want (apache, nginx, openssh server)
3. Provide stats for the deployed machines
   - uptime, cpu/gpu performance, network, temperature graphs.
   - Notify on crash/high traffic via email
   - Health monitoring
   - Allow system administrators to save their OS images as templates and share them on the website
4. Allow importing and exporting of SSH public keys. Possible multiple auths
5. Allow web console to manage the system

Tasks

1. Research virtualbox deployment script automation

   - virtualbox api documentation
   - see sample and similar scripts and see capabilities and constrains

2. Create

Keywords

Platform-as-a-Service System as a service Cloud computing Virtualbox Virtualisation

Technologies:

1. docker
2. kubernets
3. flynn
4. Chef
5. Virtualbox
6. bash
7. Web API

Similar applications in the wild

digitalocean amazon AWS heroku VULTR Azure Linode VULTR Openshift

Books

Research resources (Articles, Blogs, Guides)

Title	Type	Description	
VIRTUALIZATION:			

CONCEPTS, APPLICATIONS, AND PERFORMANCE MODELING	Background	Will back up the claims I do about performance and usage	Menasc´e, D. A. (2005). VIRTUALIZATION: C November 19, 2016, from http://cs.gmu.edu/~
Creating REST APIs to Enable Our Connected World	API	To ensure great API for my project	CA Technologies (2005). Creating REST API http://www.ca.com/content/dam/ca/us/files/wh
Containers vs. Hypervisors: Choosing the Best Virtualization Technology	Alternatives	Investicate doker vs virtualisation	BROCKMEIER J. (2010). Containers vs. Hyp 19, 2016, from https://www.linux.com/news/co
Chef and HPE OneView Integration	UNIX integration	Chef integration guide	Hewlett Packard Enterprise (2016). Chef and composable-assets.mr-file-serve.com/prod/a
Chef bash guide	UNIX integration		https://docs.chef.io/resource_bash.html
Learn the Chef basics on Red Hat Enterprise Linux with Vagrant and VirtualBox	UNIX integration	Chef on RHEL with Vagrant and Virtualbox	Chef Software (2016). Learn the Chef basics November 19, 2016 from https://learn.chef.io/
How to design your server virtualization infrastructure	Background	Design basic guide	Techtarget. How to design your server virtualiz http://searchservervirtualization.techtarget.cor
Five tips for building a VMware virtual infrastructure	Guide	tips	Davis D. (2013). Five tips for building a VMw http://searchservervirtualization.techtarget.cor
Virtual Infrastructure	Definition	word definition	https://www.techopedia.com/definition/30459/
Virtualization: Build an IT Lab for Virtual Machines	Guide		https://technet.microsoft.com/en-us/library/hh3
Hyperbox - Manage your VirtualBox infrastructure!	Management		https://forums.virtualbox.org/viewtopic.php?f=
Free Virtualization Monitoring. Unlimited. Forever.	Monitoring		https://turbonomic.com/free-tool-vhm-fiber-opt display&utm_campaign=vhm-fiber-optic&utm
Oracle VM 3:			

Building a Demo Environment using Oracle VM VirtualBox	Guide		http://www.oracle.com/technetwork/server-sto
The Top 5 Things to Automate with Puppet Right Now	Alternatives		https://puppet.com/system/files/2016-07/pupp
The State of Public Infrastructure-as-a-Service Cloud Security	Concerns		http://cloudcomputing.ieee.org/images/files/p
Understanding Cloud Computing Vulnerabilities	Concerns		http://cloudcomputing.ieee.org/images/files/p
Heterogeneous Cloud Computing: The Way Forward	Background		https://s3.amazonaws.com/ieeecs.cdn.cci/do
Intel invested $740 million to buy 18 percent of Cloudera	Background		http://www.reuters.com/article/us-intel-clouder
Virtualization and Cloud Computing	Background		http://www.intel.com/content/dam/www/public/ guide.pdf
What are the advantages of using Linux red hat?	UNIX integration		https://www.quora.com/What-are-the-advanta
Bash Guide for Beginners	UNIX integration		http://tldp.org/LDP/Bash-Beginners-Guide/htr
Kubernetes on Hitachi Unified Compute Platform (UCP)	Alternatives		https://www.hds.com/en-us/pdf/white-paper/ku
VBoxHeadless - Running Virtual Machines with VirtualBox 5.1 on a headless Ubuntu 16.04 LTS Server	UNIX integration		https://www.howtoforge.com/tutorial/running-vi
VirtualBox extensions for Metal as a Service	UNIX integration		https://insights.ubuntu.com/2015/01/15/virtual
2016 Gartner			

Magic Quadrant for Enterprise Application Platform-as-a-Service Worldwide	Background		https://www.gartner.com/technology/media-pro 9b4d-43fcb322a849
Create your own Heroku on EC2 with Vagrant, Docker, and Dokku	Alternatives		http://blog.clearbit.com/ec2-heroku/
Make Your Own Heroku with Dokku and DigitalOcean	Alternatives		https://rogerstringer.com/2015/05/13/make-yo
What is server virtualization?	Background		http://www.nec.com/en/global/solutions/server
How To: Port Forwarding on VirtualBox	Guide		https://github.com/CenturyLinkLabs/panamax

citation example

```
sunt in culpa qui officia deserunt mollit anim id est laborum (Menasc D. 2005).
```

Needs further research

Features

1. Multiple locations
2. Redundancy
3. Reincarnation/Healthmonitor

Keywords

Puppet and Jenkins, Octopus Deploy, Chef, Kubernetes, docker, Flynn.

Possible Reading materials

1. Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, and IaaS) `Michael J. Kavis`

   - An expert guide to selecting the right cloud service model for your business, allowing for the delivery of computing and storage capacity to a diverse community of end-recipients. Helping you cut through all the haze, Architecting the Cloud is vendor neutral and guides you in making one of the most critical technology decisions that you will face: selecting the right cloud service model(s) based on a combination of both business and technology requirements.

2. Cloud Computing: Concepts, Technology & Architecture (The Prentice Hall Service Technology Series from Thomas Erl) `Thomas Erl`

   - Is for beginners looking to learn more about cloud computing and gives a broad over view of the topic. Erl teams up with cloud computing experts and researchers to break down cloud computing technologies and practices. The book also establishes business-centric models and metrics that allow for the financial assessment of cloud-based IT resources and their comparison to those hosted on traditional IT enterprise premises. It also provides templates and formulas for calculating SLA-related quality-of-service values and numerous explorations of the SaaS, PaaS and IaaS.

3. Cloud Computing Explained: Implementation Handbook for EnterprisesCloud Computing ExplainedCloud Computing Explained `John Rhoton`

   - describes the benefits and challenges of Cloud Computing and leads the reader through the process of assessing the suitability of a cloud-based approach for a given situation, calculating and justifying the investment that is required to transform the process or application, and then developing a solid design that considers the implementation as well as the ongoing operations and governance required to maintain the solution in a partially outsourced delivery model.

Project Proposal

Why is the project worth doing:

1. Rise of popularity of the cloud
2. Virtualisation removes incompatable hardware architecture bugs through the hypervisor
3. Low cost
4. Lowers barrier to entry

5. Server migrations are easy
6. Scalable
7. Utilisation
8. security concern
9. definition
10. Benefits of virtualisation
11. APIS