CITERUS
Utvecklar människor och mjukvara

Jfokus 2014 - PaaS Hands-On Lab

Håkan Jonson, Citerus AB
hakan.jonson@citerus.se

Patrik Fredriksson, Citerus AB
patrik.fredriksson@citerus.se

Agenda

9:00	Cloud Computing Case Study, dotCloud & Notes
9:45	Break + VM Preparation
10:00	OpenShift - Hands-on
10:45	Break
11:00	Jelastic - Hands-on
11:45	Operations Outro

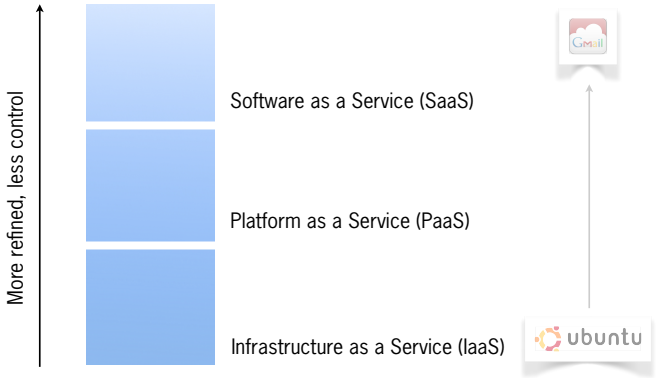
"Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet)."

wikipedia

National Institute of Standards and Technology

- On-demand self-service
  - *provision of cloud resources on demand whenever they are required*
- Broad network access
  - *available for access from a wide range of devices - from a wide range of locations that offer online access*
- Resource pooling
  - *a pool of resources that can be allocated to many different tenants*
- Rapid elasticity
  - *ability to scale resources both up and down as needed*
- Measured service
  - *aspects of the cloud service are controlled and monitored by the cloud provider*

Cloud Providers; Service Level



Cloud Providers

- Infrastructure as a Service (IaaS)
  - Mature market; Amazon market leader.
- Platform as a Service (PaaS)
  - Market in consolidation; many providers in beta, moving target.

Choice of Provider; Things to Consider

- Level of Maturity
- Deployment Routines
- Tooling
  - Administration
  - Monitoring
- Infrastructure and Service Stack
- Language Support (Services)
- SLA and Legal Considerations
- Pricing

Escape Route (*what if I get it wrong?*)

- Use a established and mature technology stack;
- Keep number of platform customizations to a minimum;
- Own your data.

- Easier to switch to other provider;
- Worst case; decrease level of abstraction (if possible) ..

..e.g move to a IaaS and install your own stack.

The Project

Reflections & Lessons Learned

- Own Your Data / Avoid Platform Customizations
  - Turned out extremely well when we eventually switched platform; system migration including transfer of live data took apx. 3 hours.
- Geographical Location / Network Latency
  - Depending on your type of system network latency might be of interest; geographical location does indeed matter if low ping is required.
- Quality of Support Organization / SLA
  - Communication between time zones hurts; using a provider with support office hours in US Pacific Time gives you a GMT+1 window between apx. 16.00 - 18.00 (if you work typically office hours yourself).
- Pricing
  - It's easy to forget that you probably need a couple of mirrored environments when you calculate prices in the pay-for-what-you-use price model (e.g stage and test); price will thus probably be higher than expected.

Linux VM Image
Overview

Installed Software

- Ubuntu 13.10 (32-bit)
- IntelliJ IDEA 13 Community Ed with Cursive Clojure EAP plugin
- Java OpenJDK 1.7

Command line tools in PATH

`mvn` - Maven, Java build tool

`lein` - Leiningen, Clojure build tool

`git` - Git, distributed version control system

`rhc` - Red Hat OpenShift command line interface

`heroku` - Heroku Toolbelt, command line interface

User and File System Layout

Username and Password

- user: `paas-user`
- password: `password`

File Structure

- Home directory: **`/home/paas-user`**
- Project source files: **`/home/paas-user/project`**

Building Notes

1. Start the virtual machine
2. Start Terminal
   - Clojure

```
1. cd /home/paas-user/project/notes
2. git pull
3. lein ring uberwar
```

   - Java

```
4. cd /home/paas-user/project/notes-java
5. git pull
6. mvn clean install
```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OPENSHIFT

https://www.openshift.com/

by Red Hat

Online
Public PaaS

Enterprise
Private PaaS

Origin
Community PaaS

OpenShift Online

- Runs on AWS EC2 US-East
- Support for a number of languages, frameworks, and applications:
  - Java, Ruby, PHP, Pearl, Node.js, Python
  - MongoDB, MySQL, PostgreSQL
  - Jenkins, Drupal, WordPress
  - … and anything that can run on Linux
- Horizontal auto scaling of web nodes
- Free and paid tiers

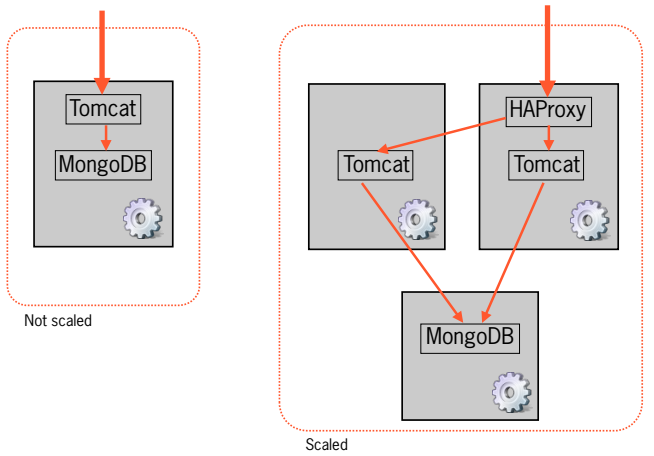
OpenShift - Basic concepts

- Gear
  - A container with a set of computing resources that runs your application.
- Cartridge
  - Packaged frameworks and components (e.g. databases) used to create an application.

OpenShift - Tooling

- rhc - client tool
- Web UI
- Eclipse plugin (IntelliJ/IDEA support from 13)
- Java Client API
- REST API

Scaling



OpenShift Online - Pricing

Free Plan

3 small Gears @ 512 MB RAM, 1 GB Disk

Silver Plan

(EUR 15/month)

3 small Gears @ 512 MB RAM and 6 GB Disk

Additional gears (max 16), per h:

Small (512 MB RAM): € 0.02

Medium (1 GB RAM): € 0.04

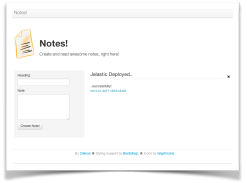
Large (2 GB RAM): € 0.08

Current as of 2014-01-22 - https://www.openshift.com/products/pricing

OpenShift - Deployment

4. Push!

3. Commit to local Git repository



2. Configure additional cartridges

1. Create Application

OpenShift
Hands-on

OpenShift - Explore Further..

- Check out the web administration interface
  - Add cartridge: “OpenShift Metric 0.1”
- Access your application using SSH
  - Connection string available in web interface
- Push an application code change
  - e.g make some changes to the GUI.
- Access the application logs
  - ..instructions via: `rhc help`
- Make a application snapshots (takes a while)
  - `rhc snapshot save -a notes`

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http://www.jelastic.com/

Jelastic - Online

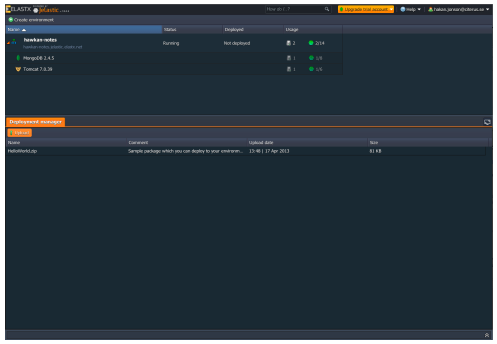
- Licensed PaaS Platform
  - Elastx single licensed provider in Sweden
  - ServInt (US), Dogado & Host Europe (DE), Tsukaeru (JP), Planeetta (FI), Websolute and Locaweb (BZ), Rusonyx, Reg.ru and Infobox (RU), Innofield (CH), Neohost (UA), Lunacloud (FR), Info.nl (NL), Layershift (UK), *etc*.
- Java (6 & 7), PHP
- Closed Source
- Private Clouds
- 2 Weeks Trial Period (no free version)

Jelastic - Basic Concepts

- Environment
  - Set of services (such as Tomcat, MongoDB, MySQL, *etc*).
  - Scaling, management and configuration per Environment
- Web Based Management & Administration
- Priced by scaling units (*cloudlets*)
  - Minimum Guaranteed / Maximum Allowed

Jelastic - Tooling

- Web UI
- IDE Plugins
  - Eclipse
  - Netbeans
  - IntelliJ
- Maven Plugin
- REST API (beta)

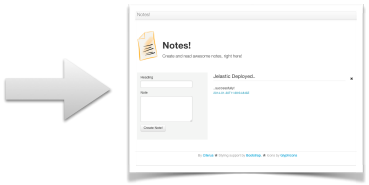


Jelastic - Pricing

- Cloudlet
  - Resource Allocation
  - Minimum Guaranteed (Reserved)
  - Maximum Allowed (Scaling Limit)
  - Discounted by Reserved Cloudlets

- Gotcha; might need additional environments for separate services to support individual actions such as e.g restarts, updates, *etc*.

Jelastic - Deployment



3. Deploy Application using Web UI / Maven / IDE Plugin

2. Create and Configure Environment

1. Create Application

Jelastic
Hands-on

Jelastic - Explore Further..

- Explore the web administration interface
  - Access Tomcat Logs
  - Add SSL support
  - Add the FTP plugin to access Tomcat
- Modify Notes Java and deploy using Maven (pom.xml)
  - ..use Jelastic online instructions

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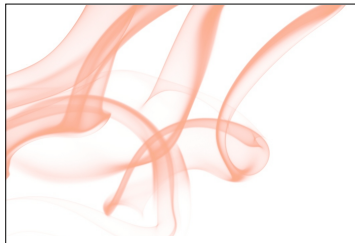
Operations - Monitoring with New Relic

- Application & Server Monitoring SaaS
  - https://www.newrelic.com
- Lightweight Free Plan
- Integrated JVM Agent
  - *..which more or less instruments your entire application*
- Live Profiling Capabilities
- Response Time Measurements
- Database Monitoring

- ..and a lot more!

Operations - Backup

- Do not rely on platform backup alone
- Integrate scheduled backups in your continuous deployment cycle
- Implement regularly scheduled backups
- Move backup data to third party host (e.g Amazon S3 or your basement)
- Leverage backup data for local testing and debugging
  - ..will force you to keep your restoring procedures up to date.



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Thanks!

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