



**GEMTALK**  
SYSTEMS

## ***Smalltalk in the Cloud***

***ESUG 2013, Annecy, France***

***Tuesday, 10 September, 11:30 am to noon***

***James Foster, Director of Professional Services***

# Abstract

- In this talk we describe a Platform as a Service (PaaS) for Smalltalk and show how a Smalltalk application can be deployed easily to Amazon's EC2 using a provided AMI with Cloud Foundry built-in.
- We look forward to getting feedback on how this can be made more useful to the community.

# Agenda

- Overview of Cloud Foundry
- Cloud Foundry on Amazon EC2
- Pharo in the Cloud
- GemStone/S in the Cloud

# Hosting Options

What is provided by vendor:

Type	Utilities	Hardware	Stack	Applications
Self-hosting				
Data center	✓			
IaaS	✓	✓		
PaaS	✓	✓	✓	
SaaS	✓	✓	✓	✓

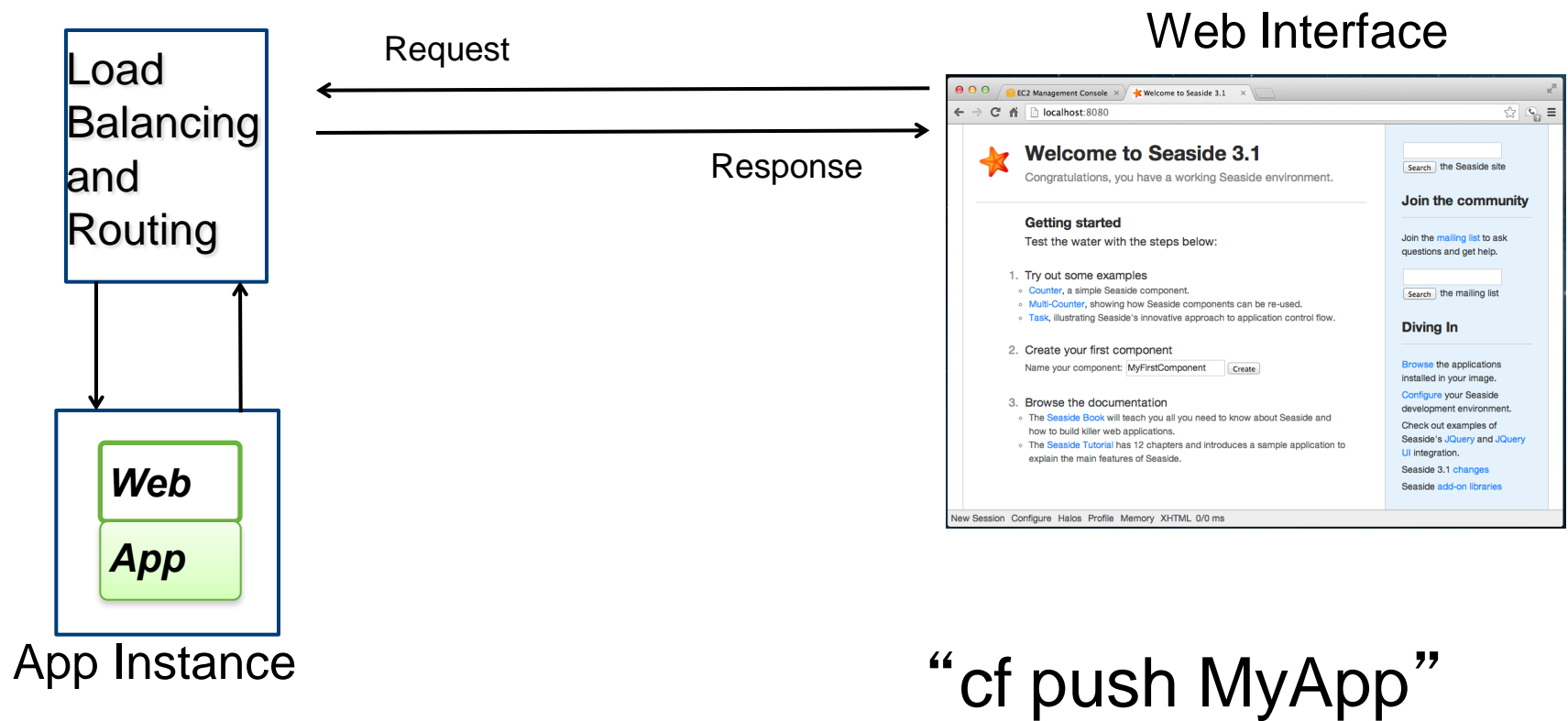
Utilities: Network, power, A/C

Hardware: CPU, RAM, disk

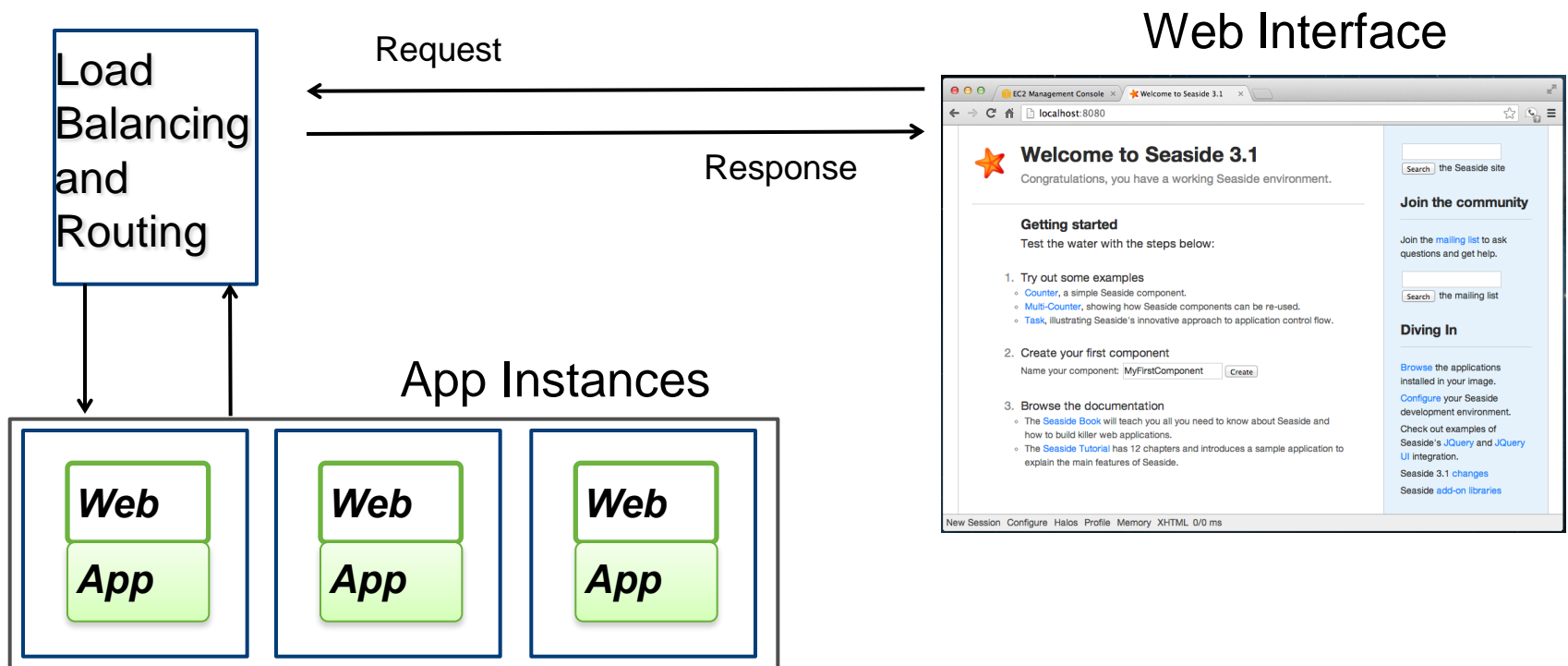
Stack: operating system, web server, runtime, framework

Application: this is the programmer's concern

# Accessing Applications

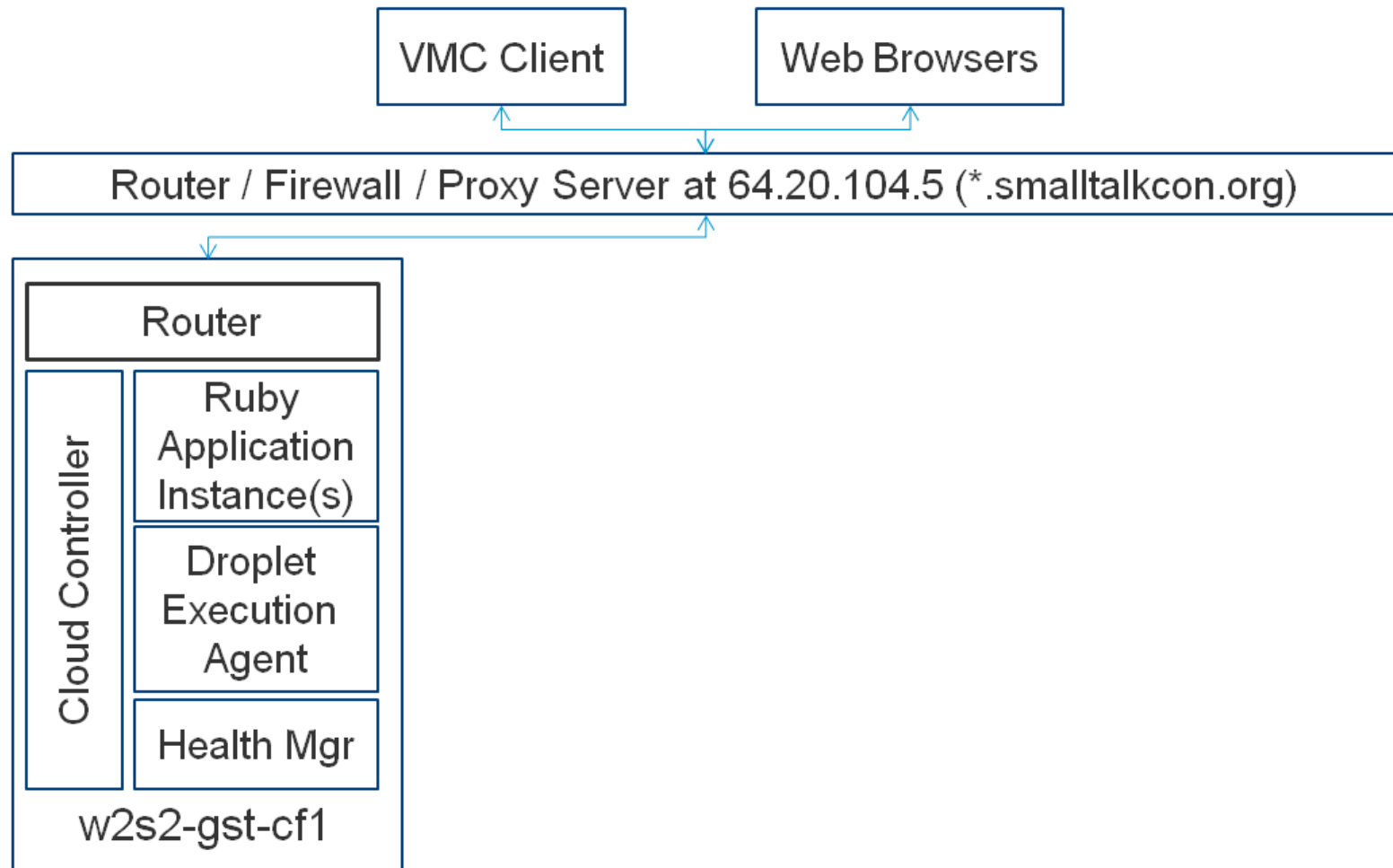


# Scaling Applications



“cf instances MyApp 3”

# Sample Server Architecture



# Support for Ruby

- Interpreter works with text files
- Application code "includes" external libraries
- Frameworks (Rails, Sinatra) can be pre-loaded on server



# Support for Java

- Runtime VM works with "jar" files
- Application code "includes" external libraries
- Frameworks (Spring, Lift, Grails) can be pre-loaded on server

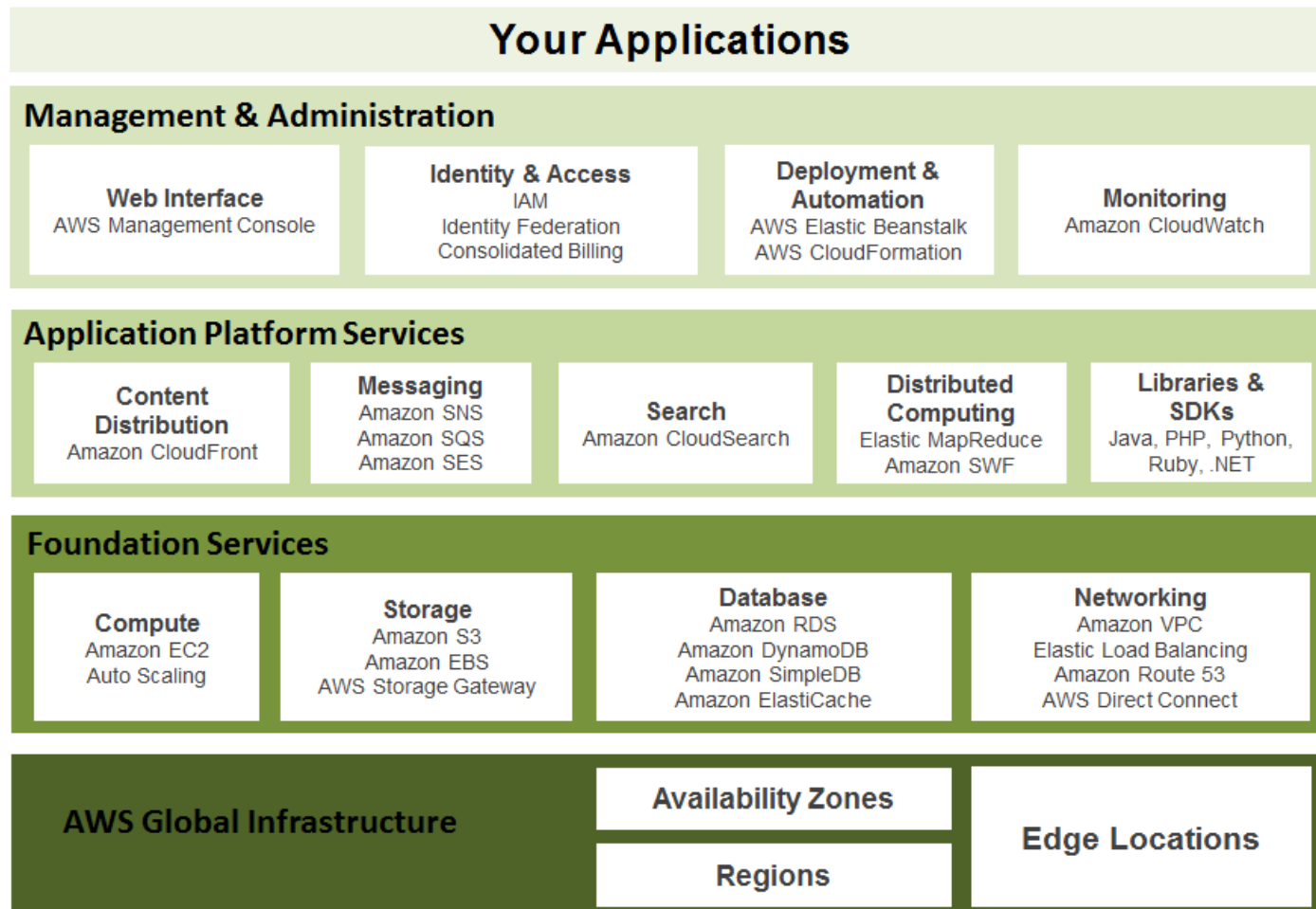
# How is Smalltalk Different?

- Monolithic image
  - All application and framework together
  - Not in text files
- Could push text files and build image
- Or just push the whole image!

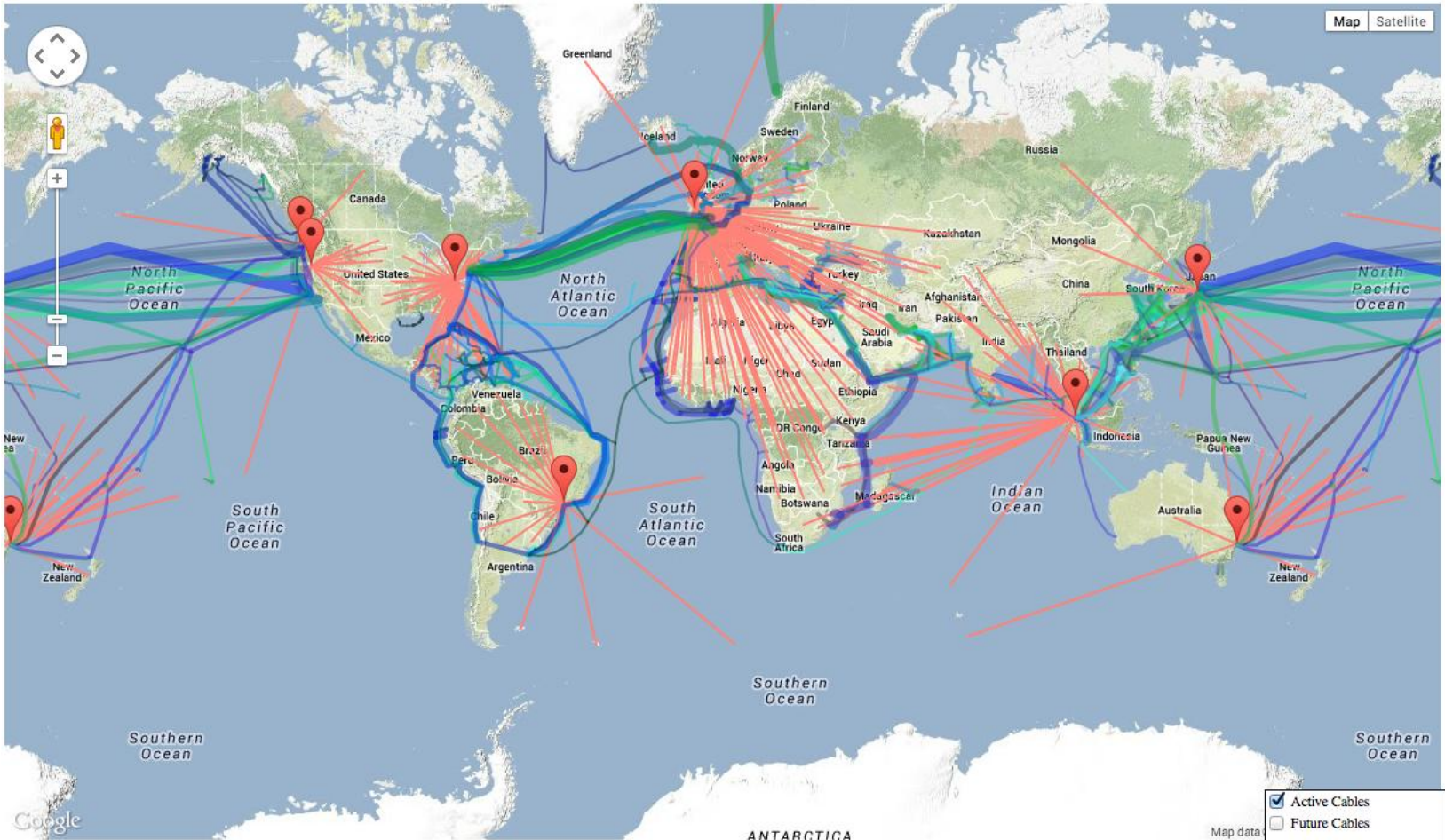
# Cloud Foundry

- [www.cloudfoundry.com](http://www.cloudfoundry.com)
  - commercial hosting by Pivotal (VMware, EMC, GE)
- [www.cloudfoundry.org](http://www.cloudfoundry.org)
  - Open source PaaS framework

# Amazon Web Services (AWS)



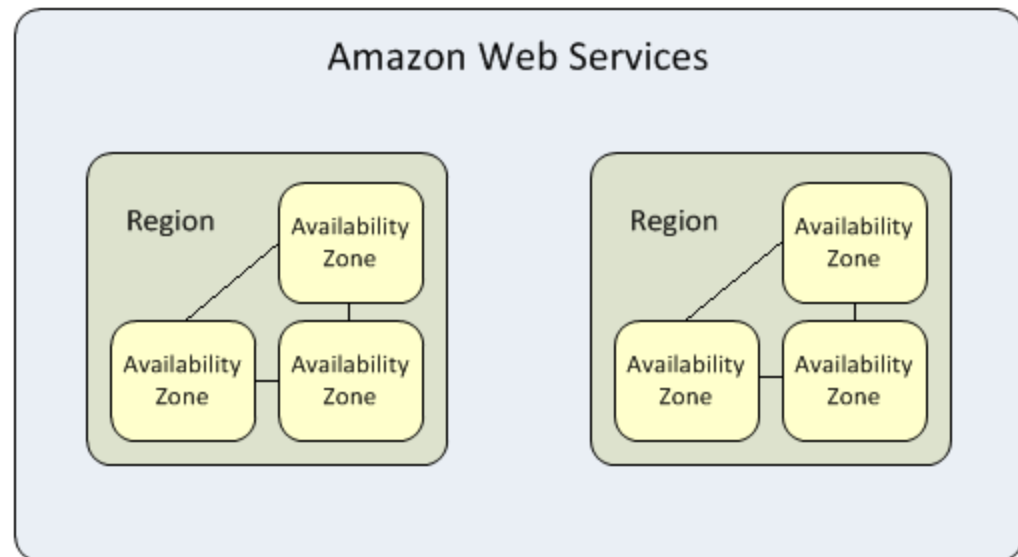
# AWS Regions



- <http://turnkeylinux.github.io/aws-datacenters/>

# Regions and Availability Zones

Region
US East (Northern Virginia) Region
US West (Oregon) Region
US West (Northern California) Region
EU (Ireland) Region
Asia Pacific (Singapore) Region
Asia Pacific (Sydney) Region
Asia Pacific (Tokyo) Region
South America (Sao Paulo) Region



# IP Addresses

- "Elastic IP"
  - Static IP that can be moved between VMs
- "Route 53"
  - Domain Name Server



# Elastic Block Store (EBS)

- Persistent disks (volumes)
- Can be moved from VM to VM
- Can have multiple per VM



# Elastic Cloud Computing (EC2)

Instance Family	Instance Type	Processor Arch	vCPU	ECU	Memory (GiB)	Instance Storage (GB)	EBS-optimized Available	Network Performance
General purpose	m1.small	32-bit or 64-bit	1 <sup>1</sup>	1	1.7	1 x 160	-	Low
General purpose	m1.medium	32-bit or 64-bit	1	2	3.75	1 x 410	-	Moderate
General purpose	m1.large	64-bit	2	4	7.5	2 x 420	Yes	Moderate
General purpose	m1.xlarge	64-bit	4	8	15	4 x 420	Yes	High
General purpose	m3.xlarge	64-bit	4	13	15	EBS only	Yes	Moderate
General purpose	m3.2xlarge	64-bit	8	26	30	EBS only	Yes	High
Compute optimized	c1.medium	32-bit or 64-bit	2	5	1.7	1 x 350	-	Moderate
Compute optimized	c1.xlarge	64-bit	8	20	7	4 x 420	Yes	High
Compute optimized	cc2.8xlarge	64-bit	32	88	60.5	4 x 840	-	10 Gigabit <sup>4</sup>
Memory optimized	m2.xlarge	64-bit	2	6.5	17.1	1 x 420	-	Moderate
Memory optimized	m2.2xlarge	64-bit	4	13	34.2	1 x 850	Yes	Moderate
Memory optimized	m2.4xlarge	64-bit	8	26	68.4	2 x 840	Yes	High
Memory optimized	cr1.8xlarge	64-bit	32	88	244	2 x 120 SSD	-	10 Gigabit <sup>4</sup>
Storage optimized	hi1.4xlarge	64-bit	16	35	60.5	2 x 1,024 SSD <sup>2</sup>	-	10 Gigabit <sup>4</sup>

- <http://aws.amazon.com/ec2/instance-types/>

# AWS Management

- Command Line & Programming API
- Web Management Console
  - <https://console.aws.amazon.com/>
- Demo!

# Dream...

- Offer Smalltalk in the Cloud
- Let me know what you want
  - Pharo
  - GemStone/S

# Thanks & Questions?

- Thanks to
  - Dale Henrichs, Peter McLean, and Monty Williams
  - John Thornton (JonnyT)
  - Norm Green and Dan Ware for the project
  - Tim Felgentreff of HPI
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