Cloud Computing With Red Hat Enterprise Linux on Amazon EC2

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Michael Ferris, Product Management, Red Hat
Demand is Unpredictable

Daily Pageviews (percent)
How Do You Plan For This?
What is Cloud Computing?

• On-demand virtualized infrastructure
• Unbounded capacity
• XML Web service (or controlled by a Web service)
• Utility business model
Cloud Computing Enables Organizations To...

- Extend compute resources outside the walls of the data center
- Scale resources up or down with business needs
- “Rent” services when needed
- Only pay for consumed services
- Move CapEx to OpEx
- Take advantage of high capacity, highly available infrastructure without upfront investment
Don’t Do the Muck
Amazon Web Services Are...

Building block services that allow organizations to innovate and save money

- Infrastructure As a Service
  - Amazon Simple Storage Service
  - Amazon Elastic Compute Cloud
  - Amazon Simple Queue Service
  - Amazon SimpleDB

- Payments As a Service
  - Amazon Flexible Payments Service
  - Amazon Fulfilment Service

- People As a Service
  - Amazon Mechanical Turk

- Alexa Web Services
  - Alexa Web Information Service
  - Alexa Top Sites
  - Alexa Site Thumbnail
  - Alexa Web Search Platform
Predictions Cost Money
Infrastructure Cost $
Predictions Cost Money

Infrastructure Cost $

Predicted Demand
Predictions Cost Money

Infrastructure Cost $

Large Capital Expenditure

Predicted Demand

Traditional Hardware
Predictions Cost Money

Infrastructure Cost $

Large Capital Expenditure

Predicted Demand

Actual Demand

Traditional Hardware
Predictions Cost Money

Infrastructure Cost $
Predictions Cost Money

Infrastructure Cost $

You just lost customers

Predicted Demand

Traditional Hardware

Actual Demand

Opportunity Cost
Predictions Cost Money

Infrastructure Cost $
Cloud Computing with Red Hat Enterprise Linux - BETA

Red Hat Enterprise Linux...
...Purchase by the hour
...Delivered in the Amazon Web Services cloud
...Supported by Red Hat
Why Red Hat in the Cloud?

• The value of virtualization
  • Clouds are enabled by virtualization

• Freedom: From infrastructure and budget constraints

• Power: To scale

• Control: On-demand resources
  • Consistent on and off-premise infrastructure
  • 3,400 Certified Enterprise Linux Applications
Enterprise Applicability

Users
• Developers, ISVs
  • Scale-out w/o
• SMEs/Startups
  • Scaling without capital
• Finance and Banking
  • Peak Load Capacity
• Engineering
  • Time to Market
• Business Owners
  • Disgruntled with in-house IT

Workloads
• Development, Test QA
• Internet Facing Services
• Large-scale Batch processing
• Simulations
• Rendering
Red Hat – Amazon Partnership:
Teamed to build complete on-demand IT Infrastructure as a Service

Supported By
Red Hat

On-demand high-scale infrastructure
Amazon handles metering and billing

Managed By
You

Joint support escalations
Red Hat delivered technology and services

Root access and control of images
Red Hat Network for update, management, monitoring
Fitting the Pieces Together

User Application
Red Hat Enterprise Linux Server
Amazon EC2 Instances
Amazon S3
Amazon SQS
Amazon SimpleDB

Amazon Web Services (AWS)
### Five Amazon EC2 Instance Types

<table>
<thead>
<tr>
<th></th>
<th>Standard Instances</th>
<th>High-CPU Instances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small</td>
<td>Large</td>
</tr>
<tr>
<td>Bits</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>Memory</td>
<td>1.7 GB</td>
<td>7.5 GB</td>
</tr>
<tr>
<td>Compute Units</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Virtual Cores</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Storage</td>
<td>160 GB</td>
<td>850 GB</td>
</tr>
<tr>
<td>I/O Perf</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Price per Instance Hour</td>
<td>$0.21</td>
<td>$0.53</td>
</tr>
</tbody>
</table>
$5 or $30,000 For a Prototype?

Amazon.mil?

DISA is intrigued by Web services model for creating systems

BY Bob Brewin
Published on Oct. 30, 2006

In a recent test, the Defense Information Systems Agency compared the cost of developing a simple application called the Tech Early Bird on $30,000 worth of in-house servers and software with the costs of developing the same application using the Amazon Elastic Compute Cloud from Amazon.com's Web Services. Amazon charged 10 cents a minute for the service, and DISA paid a total of $5 to develop an application that matched the performance of the in-house system.
$5 or $30,000 For a Prototype?

$30,000 worth of in-house servers
$5 or $30,000 For a Prototype?

$30,000 worth of in-house servers

DISA paid a total of $5
1. it analyzes your images
2. it feels your music
3. it customizes a video
From 50 to 3400 Instances in 3 Days
Hadoop and Amazon EC2
Technology:

How Red Hat Enterprise Linux on Amazon EC2 Works
Launch an instance

Red Hat Enterprise Linux on Amazon EC2
Run One Hour, or Run Forever

Red Hat Enterprise Linux on Amazon EC2
4 Shut Down Whenever You Want
You Have Full Root Access!

- SSH command line access
- Root access uses certificates, not passwords by default
- Administer just like a physical server
Security is Built In From the Ground Up

• Each account has its own firewall
  • By default no ports open
  • Multiple security groups
  • Configurable rules

• Web Service control interface implements
  • Public/Private key authentication
  • Or access via a certificate (different than certificate used for root access)

• SSL transport for control interface
• Supports VPN if you wish
Where do we go from here?

Further Extend the RHEL Ecosystem

• Applications in the Cloud
  • 3,400 RHEL Certified Applications

• Middleware in the Cloud
  • JBoss on EC2

• Grid Computing in the Cloud
  • Red Hat MRG (Messaging, Realtime, Grid) on EC2

• Management in the Cloud
  • Extend Red Hat Network, JBoss Operations Network
  • Use Enterprise IPA (Identity, Policy, Audit)
  • Extension of the on-premise cloud into EC2
  • Red Hat MRG (Messaging, Realtime, Grid)
Getting Started

• Available Today:
  • Red Hat Enterprise Linux on EC2
    • http://www.redhat.com/solutions/cloud/
      Pricing starts at $19/month plus $0.21 per hour for every deployed server
  • For more information on Amazon EC:
    • http://aws.amazon.com/ec2