Cloud Computing and its Relevance to Distance Learning

Bina Ramamurthy
Katharina Dittmar
Jessica Poulin
This talks is partially supported by National Science Foundation grants DUE: #0920335, OCI: #1041280
What is cloud Computing?

- How is it different from web-based application or mobile application?
- Is it here to stay?
- Big data and cloud relationship?
- How DO students learn on the cloud?
- BIO & CSE collaboration
- Latest URL: http://popfrontpage.appspot.com/
Introduction: A Golden Era in Computing

- Powerful multi-core processors
- General purpose graphic processors
- Superior software methodologies
- Virtualization leveraging the powerful hardware
- Explosion of domain applications
- Proliferation of devices
- Wider bandwidth for communication
Top Ten Largest Databases

Top ten largest databases (2007)

Ref: http://www.focus.com/fyi/operations/10-largest-databases-in-the-world/
Top Ten Largest Databases in 2007 vs Facebook’s cluster in 2010

Top ten largest databases (2007)

Ref: http://www.focus.com/fyi/operations/10-largest-databases-in-the-world/
Google App Engine Load Monitoring on 10/11/2010

### Charts

**Requests/Second**
- 6 hrs: 
- 12 hrs: 
- 24 hrs: 
- 2 days: 
- 4 days: 
- 7 days: 
- 14 days: 
- 30 days: 

![Graph showing request rate over time]

### Billing Status: Enabled (Daily budget: $2.00)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Usage</th>
<th>Cost / Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Time</td>
<td>0%</td>
<td>$0.00 / $1.20</td>
</tr>
<tr>
<td>Outgoing Bandwidth</td>
<td>53%</td>
<td>$0.12 / $0.32</td>
</tr>
<tr>
<td>Incoming Bandwidth</td>
<td>0%</td>
<td>$0.00 / $0.09</td>
</tr>
<tr>
<td>Total Stored Data</td>
<td>0%</td>
<td>$0.00 / $0.40</td>
</tr>
<tr>
<td>Recipients Emailed</td>
<td>0%</td>
<td>$0.00 / $0.00</td>
</tr>
</tbody>
</table>

### Current Load

<table>
<thead>
<tr>
<th>URI</th>
<th>Requests last 19 hrs</th>
<th>Avg CPU (API)</th>
<th>% CPU last 19 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>/favicon.ico</td>
<td>536</td>
<td>0 (0)</td>
<td>0%</td>
</tr>
<tr>
<td>/templates/main.html</td>
<td>267</td>
<td>0 (0)</td>
<td>0%</td>
</tr>
<tr>
<td>/is/dsobject.js</td>
<td>26</td>
<td>0 (0)</td>
<td>0%</td>
</tr>
</tbody>
</table>

### Errors

<table>
<thead>
<tr>
<th>URI</th>
<th>Count</th>
<th>% Errors last 19 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>favicon.ico</td>
<td>536</td>
<td>100%</td>
</tr>
<tr>
<td>templates/main.html</td>
<td>267</td>
<td>99%</td>
</tr>
</tbody>
</table>

---