Cloud Digital Repo Optimization

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Outline

- Recap
- Current Work
- Testing
- Cost Evaluation
Recap


Architecture diagram from:
https://cloud.githubusercontent.com/assets/111218/16077301/e8a0dc6c-32ef-11e6-80b4-e9e74c18973e.png
Problems with Deployment

● Previously had a green deployment
  ○ Application was running
  ○ Some features like upload were in a known failure state

● CloudFormation template isn’t being supported by creators
  ○ Pull request to GitHub repository to fix deployment issues
Scaling Down Instances

- Scaled down all instances except Solr and Fedora to the minimum t2.micro
- Solr and Fedora scaled down to t2.medium
  - Fedora requires 4GB of memory
    - Caused a failure in creating a repository
  - Solr fails to scale down below t2.medium
- Reduced cost by $243.14
Scaling Down Databases

- Both databases scaled down to t2.micro
  - Still using PostgreSQL
  - Could not find option to scale down standby in Multi-AZ

- Reduced cost by $161.04
Testing

- Manually checking metrics on original and new applications
- Creating metrics based on the user guide and features list
## Testing Results

<table>
<thead>
<tr>
<th>Metric</th>
<th>Original application</th>
<th>Scaled-down application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home page loads in under 10 seconds</td>
<td>True</td>
<td>True</td>
</tr>
<tr>
<td>New repositories appear in DB</td>
<td>True</td>
<td>True</td>
</tr>
<tr>
<td>New users appear in DB</td>
<td>True</td>
<td>True</td>
</tr>
<tr>
<td>Files successfully upload to Fedora repository</td>
<td>False</td>
<td>False</td>
</tr>
<tr>
<td>Service</td>
<td>Original</td>
<td>Improved</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Amazon EC2 Service (US West (Northern</td>
<td>$587.33</td>
<td>$206.36</td>
</tr>
<tr>
<td>California))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amazon S3 Service (US West (Northern</td>
<td>$2.60</td>
<td>$2.60</td>
</tr>
<tr>
<td>California))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amazon RDS Service (US West (Northern</td>
<td>$280.92</td>
<td>$73.04</td>
</tr>
<tr>
<td>California))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amazon ElastiCache Service (US West</td>
<td>$43.92</td>
<td>$16.11</td>
</tr>
<tr>
<td>(Northern California))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AWS Data Transfer Out</td>
<td>$4.41</td>
<td>$4.41</td>
</tr>
<tr>
<td>AWS Support (Basic)</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>Total Monthly Payment</strong></td>
<td>$919.18</td>
<td>$302.52</td>
</tr>
</tbody>
</table>
Cost Reduction

- $616.66 reduction
- 33% of original cost
Continued Work

- Add more tests/requirements
- Complete documentation on our overall process
- Scale down number of Solr instances
  - Doesn’t apply the changes to the AutoScalingGroup
Acknowledgements

Client: Yinlin Chen
University Libraries

Resources

- https://wiki.duraspace.org/display/hyku/Hyku+Product+Beta+-+Frequently+Asked+Questions
- https://github.com/hybox/aws
- http://hydrainabox.samvera.org/
- https://lucene.apache.org/solr/
- https://aws.amazon.com/rds/aurora/
- http://fedorarepository.org
Questions?