CDL Infrastructure Migration to the AWS Cloud – 1 Year Later

Presented by:
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The California Digital Library (CDL)

• **Mission**: The California Digital Library exists to support the University of California community’s pursuit of scholarship and to extend the University’s public service mission.

• **Vision**: The California Digital Library’s vision is to elevate the digital library for UC so that it becomes "expansively global and deeply local". CDL will advance the digital transition of scholarly information in three spheres:
  
  – **Access**: Scholars will have access to the highest quality research collections worldwide through services that support and enable new scholarship and make it as open as possible.
  
  – **Formats**: CDL will support all digital formats throughout their life cycle with a full range of services, especially to surface UC’s unique digital assets and collections.
  
  – **Scale**: Through partnerships and alliances, CDL will elevate services to the network level for maximum impact.

See more at http://www.cdlib.org
Mission: Accomplished
## Year to Year Comparison

<table>
<thead>
<tr>
<th></th>
<th>UCCSC 2015</th>
<th>UCCSC 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amazon EC2 Instances</strong></td>
<td>~100</td>
<td>~180</td>
</tr>
<tr>
<td><strong>Amazon RDS Instances</strong></td>
<td>~50</td>
<td>~60</td>
</tr>
<tr>
<td><strong>Amazon S3 Buckets</strong></td>
<td>~40/~15TB</td>
<td>~40 / ~20TB</td>
</tr>
<tr>
<td><strong>Amazon Accounts</strong></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Amazon Costs</strong></td>
<td>$20,000/month</td>
<td>$30,000/month</td>
</tr>
</tbody>
</table>
Project Goals

- Improve infrastructure stability
- Avoid replacing aging HW/SW
- Reduce range of required technical knowledge
- Eliminate SUSE release schedule issues
- Consolidate environments on a single infrastructure
- Enable cost effective HA/DR capabilities
- Provide responsive, flexible environment
- Track & report individual service infrastructure costs
- Increase IAS resources/bandwidth
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“Overall, I am confident that we can support our entire technology infrastructure in AWS for a cost that is no greater than what we currently pay in annual costs for our existing infrastructure.”

1 Vendor

1 Account

- S3 (Storage)
- Route53 (DNS)
- EC2 (Servers)
- VPC (Networking)
- CloudWatch (Logging)
- RDS (Databases)
- Cloudtrailing (Auditing)
- ELB (load balancing)
- AWS Linux (OS)
What’s Next (from UCCSC 2015)

- Complete the migration
- Move from On-demand to Reserved instances
- Move all appropriate services to an H/A model
- Create DR capability in an alternate region
- Evaluate EFS as H/A NFS for Homesrv
- Evaluate OpsWorks to replace Puppet
- Implement 3rd-party tools for user access to CloudWatch performance data
- CloudTrail notifications from CloudWatch
- Look at new databases (Aurora, Redshift, DynamoDB)
- Elastic Beanstalk pilot underway (IaaS > PaaS)
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180 instances
3 availability zones
60 instances per AZ
60 instances
10 instance types
6 instances per type
4 reserved instances
2 on-demand instances
6 instances (and a small cost savings)
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Next Steps for FY1617

- Complete Phase 1 of Disaster Recovery project
- More delegation of responsibilities (instance stop/start for “On-Demand” infrastructure)
- Security self-assessment
- Learn Beanstalk and the Container Service
Relentless Innovation
CDL-AWS Services

Current Use (14)

Not in Use (40)
The Fun Never Stops
Changes
NEXT EXIT
Thanks!
Questions?