# Cloud Digital Repo Optimization

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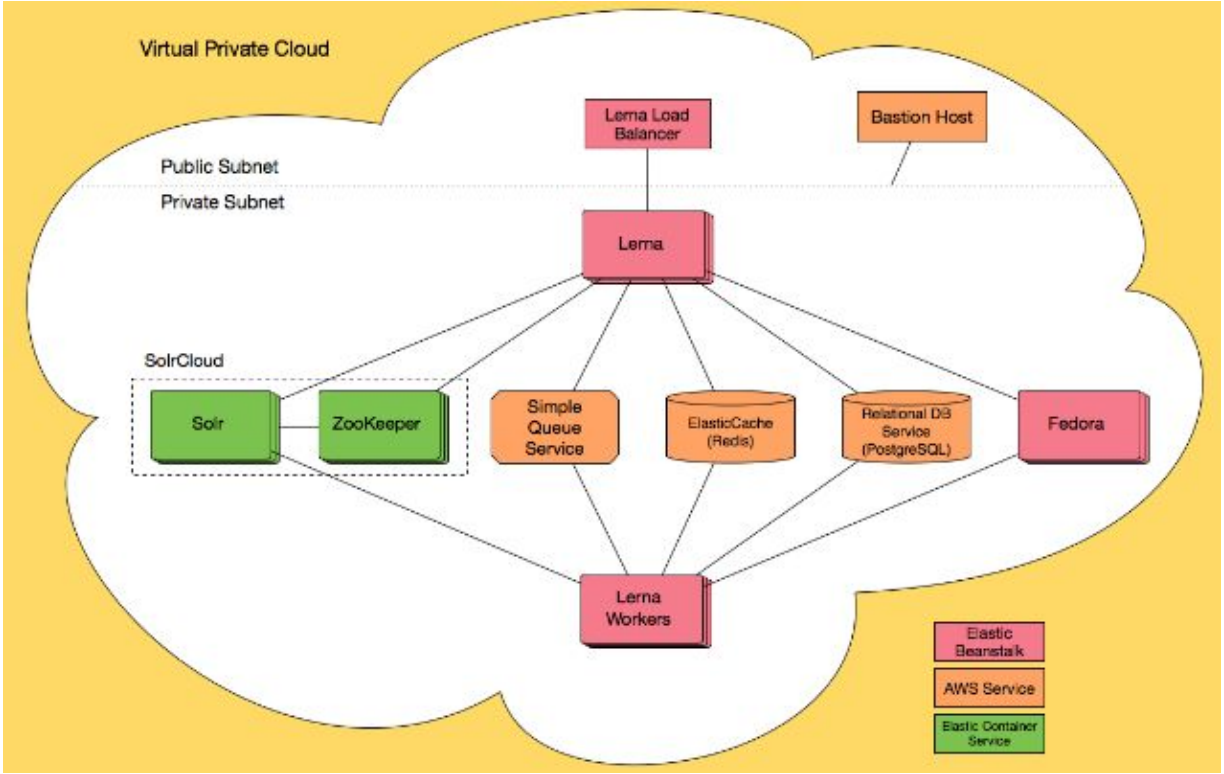
# Outline

- Recap
- Current Work
- Testing
- Cost Evaluation

# Recap

https://n2ws.com/blog/backup-and-recovery/backup-your-aws-cloud-environment-using-cloudformation-part-2




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

| Metric | Original application | Scaled-down application |
|---|---|---|
| Home page loads in under 10 seconds | True | True |
| New repositories appear in DB | True | True |
| New users appear in DB | True | True |
| Files successfully upload to Fedora repository | False | False |

# Cost Evaluation

| | |
|---|---|
| Amazon EC2 Service (US West (Northern California)) | $ 587.33 |
| Amazon S3 Service (US West (Northern California)) | $ 2.60 |
| Amazon RDS Service (US West (Northern California)) | $ 280.92 |
| Amazon ElastiCache Service (US West (Northern California)) | $ 43.92 |
| AWS Data Transfer Out | $ 4.41 |
| AWS Support (Basic) | $ 0.00 |
| **Total Monthly Payment:** | **$** 919.18 |

← Original

| | |
|---|---|
| Amazon EC2 Service (US West (Northern California)) | $ 206.36 |
| Amazon S3 Service (US West (Northern California)) | $ 2.60 |
| Amazon RDS Service (US West (Northern California)) | $ 73.04 |
| Amazon ElastiCache Service (US West (Northern California)) | $ 16.11 |
| AWS Data Transfer Out | $ 4.41 |
| AWS Support (Basic) | $ 0.00 |
| **Total Monthly Payment:** | **$** 302.52 |

← Improved

# 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://calculator.s3.amazonaws.com/index.html
- https://github.com/hybox/aws
- http://hydrainabox.samvera.org/
- https://lucene.apache.org/solr/
- https://aws.amazon.com/rds/aurora/
- http://fedorarepository.org

# Questions?