Cloud Hosting Practices
Lessons DuraSpace has learned

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Purpose

• Share what we've learned about applications development and hosting in a cloud environment
• Start a conversation about cloud best practices
• Enable more and better use of the cloud
Cloud History

**DURA CLOUD™**
Established 2009

**DURASPACE™**
Infrastructure
Established 2010

**Fedora Commons™**
Demo Site
Established 2009

**D S P A C E DIRECT**
Established 2012
The Task

• Your goal: Hosted app
• Constraints:
  – No local IT support
  – Up and running quickly
  – Scale with demand
Questions

• Which cloud providers to use?
• Which cloud services to use?
• How to put the pieces together?
• How to handle maintenance?
• How to ensure availability?
• How to scale?
• ...

Commercial Cloud

• Available
  – No datacenter required

• Flexible
  – No up front costs, no contracts

• Lots of options
  – AWS, Rackspace, Windows Azure, GoGrid, HP, …

Capabilities of clouds vary greatly
Amazon Web Services

- Clear market leader
  - 6x the market share in IaaS as its next closest competitor
- Global
  - 9 regions in 6 countries
- Scale
- History of price reductions
- Pace of Growth
EC2

• Elastic Compute Cloud
  – Manage server instances
  – Amazon Machine Image (AMI)
  – Use EBS-based instances
  – Use reserved instances
  – Use spot instances when possible
  – Use elastic IPs
EBS

• Elastic Block Store
  – Block-level storage volumes
    • Think “hard drive”
    • 1 GB - 1 TB
  – Best file system storage option for EC2
    • Fast and easy to use
    • Can be moved between instances
  – Not as durable as S3
    • Make regular snapshots to S3
Storage

• S3 - Simple Storage Service
  – Highly reliable file storage
  – Files available for immediate download
  – RRS option

• Glacier
  – Cheaper than S3
  – Same durability as S3
  – Takes longer, costs more to get data out
Design

• Stateless
  – Applications
  – AMIs
• Expect failures
  – Unexpected restarts
• Plan to scale
  – Horizontal scale: More instances
  – Vertical scale: Bigger instances
Pulling it all together

• Building AMIs
• CM Automation
  – Consistency
  – Repeatability
  – Control
• Puppet
  – Define + deploy
  – Enforce
Testing and Upgrades

- Start from latest EBS snapshot
- Change local /etc/hosts file
- To deploy: Assign elastic IP
Monitoring

- Lots of options
  - monitor.us
    - Up or Down
  - AWS CloudWatch
    - Instance monitoring
  - New Relic
    - Server and application
  - Newvem
    - Costs, activity, utilization
Accounts

• Use accounts to separate environments:
  – Development, Test, Production
  – Applications
  – Users

• Consolidated billing
  – Can complicate reservations
We are learning

• Multiple availability zones
• Elastic load balancer
• Autoscaling
  – Scale up and down
  – Based on metrics (CloudWatch)
  – Even for 1 instance
• Use IAM (ID and Access Mgmt)
Thanks!

Questions?

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