Data Center & Cloud Transition Service Models

February 4, 2013
Agenda

- Background on HUIT’s Cloud Vision and Goals
- Guiding Principles for Cloud Transition & SOC Service Models
- Transition Funding Approach
- Transition Program FAQs
HUIT Mission

To assure Harvard's leadership in IT:

We strive to make it easier for faculty, students, and staff to teach, research, learn, and work through the effective use of information technology.

HUIT Vision v2.0

HUIT will deliver:

- new applications and services rapidly & seamlessly through greater maturity in:
  - ITIL
  - Agile
  - Project Management

- all new applications and 75% of existing applications in the cloud

- FAS and CA IT plans aligned with CIO Council Strategic Plan and School IT plans

- simple financial model to improve decision-making

- robust people plans to enable a nimble, embedded, and empathetic workforce
HUIT’s Cloud & DevOps Goals

HUIT has aligned its organizational goals to address the following critical needs and achieve their associated benefits:

<table>
<thead>
<tr>
<th>Goal</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Establish cloud team and service offering</td>
<td>HUIT Top 10</td>
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<tr>
<td></td>
<td>HUIT Top 40 Goal #10</td>
</tr>
<tr>
<td>Establish DevOps team and service offering</td>
<td>HUIT Top 10</td>
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<tr>
<td></td>
<td>HUIT Top 40 Goal #11</td>
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<tr>
<td>Define a plan for migration to the cloud and support disaster recovery</td>
<td>HUIT Top 40 Goal #15</td>
</tr>
<tr>
<td>Introduce a cost-effective, shared, on-demand, and self-service computing environment</td>
<td>Harvard CIO Council Strategic Initiative #8</td>
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# HUIT Cloud & DevOps Program Overview

## The Vision for the Cloud & DevOps Program

To improve HUIT’s delivery of information technology solutions to the Harvard Community, we will employ new *methodologies, tools, and processes* that will enable us to simplify and deliver *higher-quality solutions* with *improved robustness and resiliency* in a *more timely manner*.

## Objectives

1. Develop a training curriculum to transition staff from administrator roles to cloud and DevOps engineering roles
2. Lead the transition of staff and the establishment of an empowered and service-focused culture from the existing HUIT roles into the Cloud and DevOps organizations
3. Implement design and deployment patterns to maximize consistency, quality, and reliability of applications
4. Migrate existing application workloads with a goal towards 75% of existing compute from on-premise data centers to the public cloud
5. Establish operational toolsets and processes to ensure operational effectiveness, awareness, and partnership with service teams

## Guiding Principles

1. Our staff are critical to the success of the program — we are committed to their growth and development as we pursue program goals
2. Maintaining high levels of service for existing services is also crucial, and we will thus ensure close collaboration between the Cloud and DevOps program and other HUIT teams
3. Improving deployment methods and processes are as important as the technologies we use to create cloud solutions
4. Consistent architectural and design patterns are critical to achieving enterprise-level results in the public cloud
5. Providing regular communications to all stakeholders – employees, partners, and customers — is crucial to awareness and understanding of program activities

## Key Performance Indicators

1. Percentage of HUIT employees who have successfully completed the Cloud & DevOps training program
2. Percentage of total applications migrated to an external cloud provider
3. Improved application availability from monitoring (uptime percentage)
4. Successful DR testing processes in place — average time to recovery for migrated applications
5. Percent deployment rollbacks
6. Cost of deployment solutions compared with onsite measurement
[Software | Platform | Infrastructure] as a Service

- **Software as a Service (SaaS)**
  - Developed for PaaS or IaaS
  - business – user – IT

- **Platform as a Service (PaaS)**
  - data – middleware – integration

- **Infrastructure as a Service (IaaS)**
  - servers – storage – networking

- **Applications**
  - Google Apps
  - Office 365
  - Service Now
  - Aquia (Drupal) External Hosting
  - Harvard Web Publishing
  - ATS Webroots
  - Amazon Web Services
  - Other Cloud Platforms
    - Google Compute Engine
    - Microsoft Azure
    - vCloud Air

## Objectives and Guiding Principles

<table>
<thead>
<tr>
<th>Objective</th>
<th>Guiding Principles</th>
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</table>
| Support the transition away from traditional, on-premise infrastructure to cloud delivery models in a way that minimizes financial and organizational disruption and optimizes cost. | **Create Budget Stability**: Cost models and approaches should emphasize budget stability for both the SOC and customers until a greater understanding of needs, costs, and service models is obtained  
**Reserves Support Transition**: SOC business reserves should be used to help fund transition costs  
**Consumers Pay for Local Growth**: Revenue models need to address potential costs from incremental growth in existing services  
**Models Shouldn’t Drive Poor Decisions**: Actual costs of cloud service use are not clearly understood, and so should not drive uncoordinated transition due to *perceived* cost savings  
**Capital & Projects Align to Strategy**: New capital investments and projects must be aligned to strategy, and should be closely scrutinized for value, criticality, and alternative approaches |
Cloud Transition: Budget & Forecast Challenges

• **End State & Transition Date** of individual applications is not yet known in most cases

• **Mode** of service transitions vary, and have different characteristics
  – **IaaS**, where infrastructure costs move to vendor, but most support still provided by Harvard—relatively low external cost
  – **SaaS & Hosting**, where infrastructure AND most staff support both move to vendor (eg. O365, Aleph)—higher external cost
    • SaaS & Hosting transitions will result in business owners looking to fully eliminate internal costs to cover increased external costs

• **Rate** of transition is not clearly understood now
  – Unclear how general growth trends will be offset by transition to cloud
  – Difficult to identify the point of peak service needs

• **Cost** of transition is not known, nor are potential savings
  – Backfill of staff who transition into Cloud/DevOps organizations
  – External costs for cloud vendors, new tools, and professional services
**FY16 Assumptions**

**Financial:**
- “Freeze” volumes as customers migrate to Cloud occurs
- Implement Facilities rate increase and Backup rate reduction to ‘right-size’ recovery models
- Use business reserves to fund transition to new Cloud Model
- No Backfill costs or Vacancy Savings factored into FY16 Model
- Develop new Cloud Services Financial Model for FY18

**Business/Operational:**
- Application migrations to the cloud will occur in waves over the next three years (through 2017)
- Existing data center resources will migrate to new (Cloud-DevOps) roles in concert with application migrations
- Investments will continue to be required in existing infrastructure in order to maintain service levels
- Assessment on remaining life of 60 Oxford St. DC infra to determine critical investments to be made over next 3 years and beyond
## Customer Types and Approaches

<table>
<thead>
<tr>
<th>Category</th>
<th>Approach</th>
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<tr>
<td>Colo Only</td>
<td>Bill at actual volume &amp; rates</td>
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<tr>
<td>Managed DC: transitioning to SaaS or Hosting</td>
<td>Bill at actual volume &amp; rates until transitioned</td>
</tr>
<tr>
<td>Managed DC: no transition plan</td>
<td>Bill at actual volume &amp; rates</td>
</tr>
<tr>
<td>Managed Cloud (net new)</td>
<td>Pass-through + 20% Management Charge</td>
</tr>
<tr>
<td>Unmanaged Cloud</td>
<td>Pass-through only</td>
</tr>
<tr>
<td>Managed DC: transitioning to cloud IaaS</td>
<td>“Freeze” revenue during cloud transition, cloud costs paid by SOC</td>
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High-level freeze model

“Freeze” revenue for a fixed period, absorbing early transition costs and stabilizing later volume loss, until new revenue model is created (FY18)

*NOTE: Relative Size of Costs and Savings are not yet known*