Find Your Silver Lining:
A Cloud Decision-Making Tool for New York State

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• Cloud Benefits and Concerns

• Mapping the Current Environment
  – Current practices in other states
  – New York State’s IT strategy and the cloud

• The “Cloud Decision-Making Checklist”
  – Versatile tool that organizes pertinent information in a standardized format

• OCFS Use Cases
Defining the Cloud

• Five Key Characteristics
  – Broad Network Access
  – Measured Service
  – On-Demand Self-Service
  – Rapid Elasticity
  – Resource Pooling

• Major Deployment Models:
  – Public, Private, Hybrid, and Community

• Service Models:
  – Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS)
### Benefits

- **Economies of Scale**
  - Fixed costs spread across many organizations

<table>
<thead>
<tr>
<th>Technology</th>
<th>Cost in Medium-sized Data Center (1,000 Servers)</th>
<th>Cost in Very Large Data Center (50,000 Servers)</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network</td>
<td>$95 per Mbit/sec/month</td>
<td>$13 per Mbit/sec/month</td>
<td>7.1</td>
</tr>
<tr>
<td>Storage</td>
<td>$2.20 per GByte / month</td>
<td>$0.40 per GByte / month</td>
<td>5.7</td>
</tr>
<tr>
<td>Administration</td>
<td>~140 Servers / administrator</td>
<td>&gt;1000 Servers / administrator</td>
<td>7.1</td>
</tr>
</tbody>
</table>

(Armbrust, et al. 6)
Benefits

Productivity

- Organizations can move resources from maintenance to mission-critical tasks and innovation
Benefits

• Scalability
  – Forecasting demand is difficult
  – Need-based storage

• Flexibility and Mobility
  – Remote access
  – Software updates
  – Information sharing
Concerns

• Data Security
  – Big name public clouds are prime targets for hackers
  – High profile cloud hacking incidents have caused the perception that the cloud is less secure
  – Uncertainty in the literature regarding the security of the public cloud

• Privacy
  – Externally-hosted servers create liability and accountability questions
  – Third party access
  – Legal requirements (e.g. HIPAA)
Concerns

• Compliance
  – Some funding and legal agreements require that data be hosted in a certain location
  – Agencies need to consider the varying requirements for different levels of government

• Organizational Issues
  – Technology push vs. demand pull
  – Management and policy often play catch-up to technology
Mapping the Current Environment

**Current Practices at the State Level**

- **Colorado**
  - Outsourcing email
  - Selective private cloud strategy

- **Michigan**
  - MiCloud email
  - Selective private cloud strategy

- **Utah**
  - Initial public cloud strategy
  - Strong private cloud (state platform provider)
## Mapping the Current Environment

### Cost Savings from State Cloud Strategies

<table>
<thead>
<tr>
<th>State</th>
<th>Cloud Solution</th>
<th>Estimated Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>Deploying email to the public cloud</td>
<td>$8 million annually and avoid paying about $20 million in infrastructure over 3 years</td>
</tr>
<tr>
<td>Michigan</td>
<td>Deploying data storage to state owned private cloud</td>
<td>$293,460 in the first year, more projected</td>
</tr>
<tr>
<td>Utah</td>
<td>Hosting servers on state owned private cloud</td>
<td>$4 million annually</td>
</tr>
</tbody>
</table>
Mapping the Current Environment

New York’s Goals

• Drive down cost and improve service quality
  – Consolidation
  – Virtualization of OFT services

• Cloud helps increase efficiency

• SAGE Commission goals provide insight on strategies moving forward
The Cloud Decision-Making Checklist

• Examine system attributes
  – Standardized metric
  – Useful for pilot programs or wholesale deployment
  – Can be used to match types of applications/systems to appropriate service offerings
  – Standardization promotes integration

• Checklist designed to help managers make decisions
  – Weigh criteria based on agency needs
  – Consider the benefits and concerns
• **Interoperability**
  – Describe the extent to which an application needs to integrate with other applications and/or systems.
  – Describe the extent to which an application can integrate with other applications and/or systems.

• **Data Portability**
  – Describe the extent to which an application’s components and systems can operate in alternate environments.

• **Licensing Concerns**
  – Describe any special licensing requirements that might prevent an agency from hosting certain applications on the cloud.

• **Customization**
  – Describe the extent to which the application has special requirements that need to be met for it to operate
• **User Authentication**
  – Describe the extent to which the agency seeks to differentiate system access based on a user’s role.

• **Data Storage**
  – Describe any policies regarding where, how, and with whom the data is stored (e.g. record retention policies, ownership, funding requirements, and e-discovery).

• **Data Sensitivity**
  – Describe the extent to which the data needs to be protected from unauthorized and/or unintended access.

• **Criticality**
  – Describe the extent to which the data needs to be accessible
Use Cases

Domestic Violence Information System (DVIS)

- Tracks statistical information about agencies that offer shelter programs
- System 7
  - Interoperable and portable
- User Authentication
- Customization
- Low criticality and sensitivity
  - No personal information
- Public cloud candidate
Use Cases

**Consumer Information System (CIS)**

- Tracks client cases for Center for the Blind and Visually Handicapped (CBVH)
- HIPAA regulations
- System 7 (similar to DVIS)
- User authentication and customization
- Low to moderate criticality
- HIPAA-certified public cloud candidate
Use Cases

New Yorkers Volunteer Website

- Publishes information and promotes volunteerism on the Internet
- Highly interoperable and portable
- Data is already publicly available
- Public cloud candidate
CONNECTIONS (CONX)

- Statewide automated child welfare system
- Outdated legacy systems
  - Low interoperability and portability
- High data sensitivity
  - Requires User Authentication
- High criticality
- Not an appropriate candidate for the cloud
Questions?