Managing IT in a Cloudy World

Moderator/Speakers:

Allison E. Bradsher (Moderator)
Chief Financial Officer, City of Raleigh, NC

Phil Bertolini (Speaker)
CIO/Deputy County Executive, Oakland County, MI

Samantha Sturgis (Speaker)
Partner, Perkins Coie LLP
Hip to be Square
Managing IT in a Cloudy World

Presented by, Phil Bertolini,
Deputy County Executive & CIO
bertolinip@oakgov.com

2018
The Cloud!

• Procuring the Cloud
  • What makes sense
  • Having the right people
  • RFPs

• Contracting the Cloud
  • Legal wrangling
  • Terms and conditions
  • Exit strategies

• Benefitting from the Cloud
  • Cost savings
  • Speed of change
  • Consuming what you need

• Discussing the Cloud
  • Numerous issues
  • Educating stakeholders
  • Lets talk!
Cloud Contracting
Creating a Cloud Strategy

Key Considerations:
- Data Attributes where you would look at sensitivity, privacy, volume and volatility
- Disaster Recovery and Business Continuity including your return to service objectives
- Costs including software licensing, connection fees and usage fees
- Application Readiness
- Security and Compliance Features such as CJIS, HIPAA, PCI, FIPS and others

www.g2gmarket.com
Cloud Journey Timeline

Strategy Execution and Implementation

Sept 2016: Cloud Strategy Approved

Jan 2017: Cloud Execution presented to Steering

Aug 2017: Capacity Constraint creates more cloud migrations

Sep – Dec 2017: Security consultants engaged to validate and enhance design

9/16

Nov 2016: Cloud Strategy Rolled Out

Feb 2017: Alternate Approach Taken; Cloud Design Project Launched

Aug 2017: Initial Cloud Design presented
Design Principles

• Design without reliance on Oakland County on-premise infrastructure and services
• Use core AWS services as much as possible and fill in any gaps by SaaS services.
• Design with the most current technologies and solutions
• Automation of infrastructure builds
• Least Privilege access
# Technical Debt Opportunities

## Shared Instances
- **Needed**
- Redefined and removal of shared instances for stand alone options in the cloud
- **Impacts**
- Simplifies cloud migrations
- Creates flexibility for application changes, updates and maintenance

## Network Connectivity
- **Needed**
- VPN Optimization
- Direct Connect Pipe
- Create a read only copy of our AD in AWS
- **Impacts**
- CAMS
- Court Videos
- Clarity
- WatchGuard
- Jail Video
- Any systems requiring real time connection to on premise systems

## Citrix
- **Needed**
- An upgraded environment on premise or in the cloud
- Or migrate to an AWS solution and remove Citrix
- **Impacts**
- CAMS
- BSA
- Debt Manager
- Investment Manager
- Any OS upgrades for applications using Citrix

## IAM
- **Needed**
- A way to implement Okta for the Cloud
- **Impacts**
- CAMS
- BSA
- Laserfiche
- eLearning
- Clarity

www.g2gmarket.com
Application Migration Options

- RETAIN
- RE-HOST
- REFACTO
- RE-PLATFORM
- REPLACE
- RETIRE
Application Decision Tree

Available as SaaS?
- Yes
- No
  - Majority of Users on-site?
    - Yes
    - No
    - Self-Contained Application?
      - Yes
      - No
      - Can it be integrated with data on-premise?
        - Yes
        - No
  - Cloud
  - OCIT

Government Finance Officers Association
Oakland County, Michigan
The Cloud Take-Aways!

• Procuring cloud computing can have it’s challenges
• Challenges come from inside and outside
• Educating stakeholders early in the process is a necessity
• Cloud contracts must be carefully crafted
• Legal professionals must be trained on the cloud
• Exit strategies must be well defined
The Cloud Take-Aways!

• There are numerous benefits to cloud computing
• Business cases and ROI should accompany a cloud request
• Consuming can be a cost savings over owning
• The cloud is secure!
• This stuff can be hard...so persevere!
Thank You for Attending

Phil Bertolini
Oakland County, Michigan
Deputy County Executive/CIO

Email: bertolinip@oakgov.com
Managing IT in a Cloudy World

May 7, 2018

Samantha Sturgis, Partner
(303) 291-2329
Agenda

- IT/Cloud Overview
- Selected Contract Issues
Hardware
Software
What is Cloud Computing?

- Although each vendor has different definitions, in general, typically the resources used to provide the cloud services:
  - are pooled
  - can be rapidly adjusted
  - are location independent
  - are widely accessible
- In many cloud service arrangements, the customer pays for the resources that are used
Some Ways to Categorize Cloud Services

- Single-Tenant vs. Shared Multi-Tenant
- CaaS (including DaaS) vs. SaaS vs. PaaS vs. IaaS
- Public vs. Private vs. Hybrid

- Note: Different categorization schemes may overlap (e.g., Shared Multi-Tenant vs. Public)
Single vs. Shared Multi-Tenant

- **Single-Tenant**
  - Software/Service is administered on a customer by customer basis (e.g., patches could be applied as required by each customer)
  - Model is costly and lacks scalability

- **Shared Multi-Tenant**
  - Software/Service uses a single integrated code base that is delivered to multiple customers (e.g., each customer gets the same thing)
Different Types of Cloud Computing Services

- Content as a Service (CaaS)
- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (IaaS)

Note: Other Categories Exist (e.g., DaaS – Data as a Service)
Content as a Service (CaaS)

The cloud offers a multitude of services that provide a wide variety of content, data and other services.
Software as a Service (SaaS)

Allows a user to use a software application over the internet, thereby eliminating the need to install and run the software application on the user's computer.
Software as a Service (SaaS)
Platform as a Service (PaaS)

A category of cloud computing that provides a platform (e.g. software tools) allowing customers to develop, run and manage applications.
Platform as a Service (PaaS)

What is PaaS?
Benefits of PaaS
Types of PaaS Solutions

The End of Software™
Building and Running Applications in the Cloud
Example of PaaS

Windows Azure

Windows Azure™ is a cloud services operating system that serves as the development, service hosting and service management environment for the Windows Azure platform. Windows Azure provides developers with on-demand compute and storage to host, scale, and manage web applications on the internet through Microsoft® datacenters.

Windows Azure is a flexible platform that supports multiple languages and integrates with your existing on-premises environment. To build applications and services on Windows Azure, developers can use their existing Microsoft Visual Studio® expertise. In addition, Windows Azure supports popular standards, protocols and languages including SOAP, REST, XML, Java, PHP and Ruby. Windows Azure is now commercially available in 40 countries.
Infrastructure as a Service (IaaS)

Allows customers to rent computer processing services (e.g., servers) and storage
Selected Contract Issues

Differences between Services and Software
- Software Licenses vs. Services Models
- Vendor Obligations (Software vs. Services)

Data Ownership and Security
Goods/Software vs. Services Models

- Software licenses are governed by the UCC while pure service agreements are not
  - UCC imposes implied warranties on delivered software
  - No such warranties in a pure services contract

- **Contract Acceptance - Mirror Image Rule**
  - Requires that acceptance be on precisely the same terms as the offer
  - The Uniform Commercial Code ("UCC") rejects common law "mirror image" rule, as valid contracts between merchants can be formed without all terms matching.
Common Vendor Product/Service Duties

- Installation Services – On-boarding
- Delivery of Software/Services
- Improvements/modifications
- Training
- Maintenance and Support/ Service Level Agreement

Compare Software vs. Service
What is the process for changing the platform, operating system or application?

• Can the customer refuse or delay a change? (typically only applies to software)
• How much notification needs to be given?
  • Different notice periods for routine vs. emergency changes?
• Will a test environment be provided prior to implementing a change?
• How does pricing work?

Compare Software vs. Service
Data and Security

Data and Moving to the Cloud

- Data Ownership/Use of Analytics
- Security
Data Ownership/Analytics

- Who owns data?
- Express assignment of any data that is created for customer
- How can the vendor use customer data?
Security

- Agreements may distinguish between "Security Issues" and "Security Incidents" and provide different rights, obligations and remedies for each category.
  - Security Issues – issues that could give rise to a security breach
  - Security Incidents – actual breach of security
Security Issues

- How are security issues defined?
  - Objective vs. subjective definition
  - Are issues in the vendor's control and those in the control of its subcontractors differentiated?
  - Does every problem need to be investigated?
  - Does every problem need to be fixed?
- What is the process for fixing the issue?
  - Is there a specified time frame?
  - How is the time frame adjusted for fixes that take longer to implement?
Security Incident

- Notice requirement to other party
- Remediation efforts
  - Who does what?
  - Who pays for the remediation efforts?
  - Does the breach require end-user notification?
- Who has legal liability for the incident?
  - May want to address liability caused by third parties (e.g., hackers)
Data Protection Agreements/ Addendums

- Data Protection Agreements/Addendums (DPAs) have been a fairly routine part of cross border data agreements for many years.
- DPAs have traditionally been limited to protection of personally identifiable information (PII).

New Trends:
- It is becoming more common to see DPAs in U.S. based deals.
- DPAs now frequently cover all data not just PII.
Common DPA Elements

- Security/Data policy requirements (security officer/CIO)
- Personnel – training and screening
- Scope and Disclosure of Data
- Technical security measures - such as: authorization, identification, authentication, access controls, management of media etc...
- Record Keeping – Logs
- Testing/Audit of security obligations
- Procedures for fixing issues
- Breach notification and remediation obligations