Proposed Cloud Strategy: Fall 2018

ITAG Meeting 19-NOV-18
Agenda

• Strategy scope, goal, and stages
• Defining “cloud”
• Guiding Principles
• Quick Wins
• Data governance model
• Implementation teams
• Job roles
• Measures of success
• Summary and next steps
Strategy Scope

- UW-Madison administrative and academic computing environments
  - Department of Information Technology (DoIT)
  - Administrative Information Management Services (AIMS)
  - Colleges, Schools, Departments, and Divisions
- Collaboration and support for outreach partners such as UW-Extension, State Lab of Hygiene, Wisconsin Public Television, and Wisconsin Public Radio
- Collaboration with UW System Administration
- Work with teams as a trusted partner when requested

Out of Scope

- Telling you how you must do things
- Making you stop what you’re already doing
Support research, teaching and learning, administrative, and outreach activities by delivering secure, predictable services which are focused and easy to consume.
Strategy Stages

Establish Initial Direction
- Define "cloud"
- Define cloud guiding principles
- Staff new cloud positions
- Look for quick wins

Understand Current State
- Existing Cloud services
- Standardization and automation level
- Data governance
- Security controls

Define Desired Future State
- Identify services to deliver
- Standardization and automation level
- Data governance
- Security controls

Prepare for Cloud Journey
- Design foundational infrastructure
- Document operational objectives and procedures
- Define or revise IT roles
- Define or revise IT policies

Begin Cloud Journey
- Implement foundational infrastructure
- Build MVP operational objectives and procedures
- Tiger Team(s) to deliver "quick wins"
- Define and report metrics

= iterative process
Defining “Cloud”

Cloud is not a place. Cloud is a way of delivering IT services.

“The power of the cloud was not in doing business elsewhere, the power of the cloud was in doing business in new ways that are impossible to replicate on-premises.”

Andrew G. Page, Rutgers University Office of Information Technology
https://livestream.com/accounts/4838057/events/8388978/videos/180884067 (30:45)
Guiding Principles for Cloud

General Tenets:

• “The cloud” is not a place, it is a way of delivering IT resources.
• Cloud options will be considered for all IT solutions.
• Automation is paramount across the entire technology stack.
• Virtualization and standardization are keys to automation.
• A new application architecture is required to fully leverage the benefits of most cloud services.
• People and process are a critical part of cloud adoption
• Data governance and IT security model will drive deployments.
Public Cloud Corollary:
• Can provide required data security when properly configured
• May provide cost savings over private cloud
• Competition will drive down costs of commodity infrastructure
• Non-infrastructure services will differentiate cloud providers
• New roles will emerge as adoption expands
• Not all workloads are suitable for public cloud
• Develop an exit strategy during implementation phase
Guiding Principles for Cloud

Private Cloud Corollary:

• Compute, network, and storage resources will be viewed as a pool, from which IT services can be delivered.
• New infrastructure models such as hyper-converged infrastructure (HCI) may be needed to fully realize benefits.
• Deployments should be designed with portability to public cloud in mind.
• New roles will emerge as adoption expands.
Guiding Principles for Cloud

SaaS Corollary:

• Understand vendor’s maturity level at delivering their application via cloud
• Obtain vendor’s SOC Type I and Type II reports to support Cybersecurity
• Adjust existing business processes to application design/flow
• Understand the application’s full capabilities
• Understand the application’s available APIs
• Configure application through use of application settings, don’t customize
• Control costs by licensing appropriately
• Plan to re-visit configurations recommended during implementation
• Investigate options for implementation partners
• Develop an exit plan during implementation
<table>
<thead>
<tr>
<th>Strategic Priority</th>
<th>Strategic Initiative</th>
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<tr>
<td>Educational Experience</td>
<td>• Ensure graduate student, professional student, and postdoctoral fellow mentoring, support, and <em>opportunities to enhance their experiences</em> and future success</td>
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| Research and Scholarship   | • *Nurture excellence in research, scholarship, and creative activity* across all divisions  
                                • *Optimize the research and scholarship infrastructure* of the university  
                                • Engage our interdisciplinary strength to *generate creative solutions* |
| The Wisconsin Idea         | • Extend our educational mission to Wisconsin and the world with *new technology and partnerships* |
| Our People                 | • Nurture growth of our people through *professional development* and performance excellence  
                                • Create the *best possible environment* in which our people can carry out their responsibilities to the university |
| Resource Stewardship       | • Promote resource stewardship, *improve service delivery and efficiency*, and ensure administrative capacity |
Look for “Quick Wins”

- Strategy and vision
- Alignment
- Relationship management
- Risk and compliance (including cybersecurity)
- Resource management
- Communication

Mission focused services
- Teaching and learning
- Research
- Enterprise business
- Outreach
- Business analytics

Foundational IT Services
- Telecommunications
- User services
- Systems
- Middleware: IAM, interoperability, etc.
- Productivity services: mail, calendaring, file management, etc.
- Communication
- Auxiliary services
- Performance analytics
Data Governance: Future State

**Public Data**
- **Examples:**
  - Published Research
  - Campus Maps
  - Job Postings
  - Course Information
- **Security Restrictions:** Low
- **Defined Cloud Controls:**
  - Public internet
  - Any server type
  - Any storage type
  - Minimal firewall rules
- **Approved Cloud Uses:**
  - Experimentation
  - Innovation
  - Presentations
- **Data User’s Shared Responsibility**

**Internal Data**
- **Examples:**
  - Student Records w/o PII
  - Admission Applications
  - Employment applications
  - Date of Birth
- **Security Restrictions:** Medium
- **Defined Cloud Controls:**
  - VPN
  - Any server type
  - Any storage type
  - Basic firewall rules
- **Approved Cloud Uses:**
  - Data analytics
  - Data storage
  - Public-facing apps

**Sensitive Data**
- **Examples:**
  - Unpublished research
  - Export controlled information under US Laws
- **Security Restrictions:** High
- **Defined Cloud Controls:**
  - VPN with encryption
  - Approved server images
  - Encrypted storage
  - Customary firewall rules
- **Approved Cloud Uses:**
  - Data analytics
  - Data storage
  - Public and Internal apps

**Restricted Data**
- **Examples:**
  - FERPA data
  - PHI & HIPAA data
  - DNA Profile
  - PCI data
- **Security Restrictions:** Very High
- **Defined Cloud Controls:**
  - VPN with encryption
  - Approved server images
  - Encrypted storage
  - Special firewall rules
- **Approved Cloud Uses:**
  - Data analytics
  - Data storage
  - Internal apps

**Level of Institutional Risk**
- **Very Low**
- **Very High**
Implement Foundational Infrastructure

Minimum viable security
- Cloud Security Specialist

Minimum viable connectivity
- WAN and Campus LAN Teams

Minimum viable logging
- Cloud Engineer

DevOps/Automation
- Cloud Coordinator

Public Cloud Providers
- Design recommendations

Cloud Foundations Team
Cloud Tiger Team. *Noun.* A nimble team of five to seven technical specialists who relentlessly identify opportunities to deliver secure and reliable cloud services in a highly automated manner.
# Define or Revise IT Roles: Summary

## Existing Infrastructure Roles
- Network
- Storage
- Server
- Database
- Middleware
- Messaging
- Data Movement
- Cybersecurity

## New Cloud Roles
- Services Broker
- Infrastructure Coder
- Full Stack Engineer
- Integration Specialist
- Automation Specialist

## Existing Developer Roles
- System Analyst
- Designer
- Coder
- QA/Tester
- Release Manager
- Operations

## New Cloud Roles
- Product Owner
- Microservice Owner
- Continuous Integration
- Continuous Delivery
- Automation Support
- Security Operations

## Existing Operational Roles
- Environmental Controls
- Infrastructure Installers
- Physical Security
- Upgrades and Patching
- Monitoring and Alerting
- Level I, II, and III Support

## New Cloud Roles
- Hybrid Cloud Mgmt
- Capacity Analyst
- Cost Engineer
- Lifecycle Management
- Access Control
- Automation Mgmt
- Monitor and Alert
- Level I and II Support

## Existing PMO Roles
- Business Analysts
- Project Managers

## New Cloud Roles
- Solution Discovery
- Solution Implementation
Define and Report Metrics

Quality
- Service Availability
- Service Response Time
- Service Throughput
- Repatriation Rate
- User Satisfaction
- Cloud Team Reputation
- Time to Provision
- Level of Automation
- Innovation Score
- Time to Value

Adoption
- Optimization Score
- Number Available Cloud Services
- Number of Cloud Native Apps
- Number of Re-hosted Apps
- Number of Refactored Apps
- Number of Revised Apps
- Number of Rebuilt Apps
- Number of Retired Apps
- Institutional Penetration Rate
- Number of Cloud Tiger Teams
Summary
Summary: Immediate Next Steps

Finish Socialization:
• Consensus on the Guiding Principles
• Agree on pattern-based, data-focused use of cloud controls
• Understand impact on existing roles and responsibilities
• Consensus on the members of the Cloud Foundations Team
• Consensus on the number and members of the Cloud Tiger Teams
• Consensus on the metrics for measuring cloud strategy success

Begin Implementation:
• Funding for the cloud foundations and initial quick wins
• Plan work for cloud foundations and initial quick wins
Summary: Estimated Strategy Timeline

- Secure funding for initial phases
- Discuss internal charge-back between DoIT teams
- Form Cloud Foundations Team
- Begin planning for foundational items (Azure and AWS)
- Begin defining data-focused security controls and deployment patterns

Dec 2018
- On-site AWS and Azure Training
- Deliver MVP foundational items
- Define MVPs for Phase I Quick Wins
- Finalize Google contracts

Jan 2019
- Deliver MVP foundational items
- Define MVPs for Phase I Quick Wins
- Finalize Google contracts

Feb 2019
- Deliver MVP foundational items
- Define MVPs for Phase I Quick Wins
- Finalize Google contracts

Mar 2019
- Deliver MVP foundational items
- Define MVPs for Phase I Quick Wins
- Finalize Google contracts

Apr 2019
- Deliver MVP foundational items
- Define MVPs for Phase I Quick Wins
- Finalize Google contracts

May 2019
- Deliver MVP foundational items
- Define MVPs for Phase I Quick Wins
- Finalize Google contracts

Today = iterative process
Questions
Thank You

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