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Cloud Computing

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Agenda


- Demystify "The Cloud"
- Alternative IT Sourcing Strategies
- Risks and Rewards
- Compliance Obligations
- Contractual Challenges
- Additional Resources

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Definition of a Low-Lying Cloud

Low-lying Cloud




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Low-lying Cloud



Fog

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Clouding the Issue

Cloud computing is not so much a definition of a single term as a trend in service delivery. It's the movement of application services onto the Internet and the increased use of the Internet to access a variety of services traditionally originating from within an organization's data center.

Lew Tucker, CTO of Sun Microsystems

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Cloud Computing (Gartner)

"... a style of computing where massively scalable IT-enabled capabilities are delivered 'as a service' to external customers using Internet technologies."

Gartner, Inc.

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Google's View of the Cloud

- Cloud computing is about moving everyday processes and information (email, documents, calendars, etc.) into a secure space online.
- If you're using webmail instead of a traditional desktop email program, you're already "in the cloud".
- Cloud computing makes two things possible that are difficult with traditional software:
 - Collaboration – because information and applications run in a shared space online.
 - Access – since the applications run online, you can access them with any device. All you need is a web browser.



Cloud Computing (Berkeley)

Cloud Computing refers to both the *applications* delivered as services over the Internet and the *hardware and systems software* in the *datacenters* that provide those services. The services themselves have long been referred to as Software as a Service (SaaS). The datacenter hardware and software is what we will call a Cloud. When a Cloud is made available in a pay-as-you-go manner to the general public, we call it a *Public Cloud*; the service being sold is *Utility Computing*. We use the term *Private Cloud* to refer to internal datacenters of a business or other organization, not made available to the general public. Thus, *Cloud Computing is the sum of SaaS and Utility Computing, but does not include Private Clouds.*

Above the Clouds: A Berkeley View of Cloud Computing
February 10, 2009



Software as a Service (SaaS)

- *Delivery Platforms*
 - **Managed hosting** – contracting with hosting provider to host or manage an infrastructure (IBM, OpSource)
 - **Cloud computing** – using an on-demand cloud-based infrastructure to deploy an infrastructure or applications (Amazon Elastic Cloud)
- *Development Platforms*
 - **Cloud computing** – using an on-demand cloud based development environment to provide a general purpose programming language (Bungee Labs, Coghead)
- *Application-led Platforms*
 - **SaaS applications** – using platforms of popular SaaS applications to develop and deploy application (Salesforce.com, NetSuite, Cisco-Webex)

Cloud Computing in Higher Education
Richard Katz, Phil Goldstein, and Ron Yanosky



Positioning Public Policy

"If, as argued, cloud computing represents a potentially transformative democratization of technology by making the same computing power available to individuals and small- and medium-sized businesses that the largest enterprises enjoy, elected officials have the opportunity to help deliver its enormous benefits to the full diversity of their constituents."

*Envisioning the Cloud: The Next Computing Paradigm
Marketspace Point of View (March 20, 2009)*



Alternative IT Sourcing Strategies

The range of options institutions have for providing technology services or operating technology functions aside from doing these things themselves. It includes traditional outsourcing of all or part of the IT organization, accessing externally managed applications, development environments, or hardware via the Internet, and support from consortia (e.g., open source).

Alternative IT Sourcing Strategies: From the Campus to the Cloud
EDUCAUSE Center for Applied Research (ECAR)
September 2009

Sourcing IT in Higher Education

- College/Departmental Infrastructure
 - Specialized Applications/Services
- Central IT Infrastructure
 - "Private Clouds"
- Shared Higher Education Infrastructure
 - "Above Campus Services"
- Third Party Infrastructure
 - "Public Clouds"

Forms of Alternative Sourcing Currently in Use

- 49.8% Application Software Via the Internet (SaaS)
- 19.1% 3rd Party Provided ERP Project Management
- 18.8% 3rd Party Provided Network Design
- 14.2% 3rd Party Operated Help Desk (e.g., call center)
- 9.4% 3rd Party Managed Network Operations
- 9.1% Internet or Cloud-Based Servers
- 7.8% Internet or Cloud-Based Storage
- 7.4% Primary Data Center Provided By A 3rd Party
- 7.1% 3rd Party Provided Desktop Computing Support
- 4.5% Internet or Cloud-Based Security Applications
- 3.6% Internet or Cloud-Based S/W Dev Environments

ECAR Alternative IT Sourcing Study, September 2009



Sourcing Email

- Predominant Strategy Still Self-Operation
- Nearly a quarter have engaged a commercial provider to host their primary student e-mail
 - 94% of these are using one of the free services
- Commercially hosted student e-mail is more prevalent among associate's and bachelor's institutions
- Fewer than 5% have adopted 3rd party hosting for faculty and staff email
- Reasons for outsourcing email:
 - Reduce IT Costs (70% of outsourcers)
 - Enhance Functionality (69% of outsourcers)
 - Enable Staff to Focus on Higher Priorities (56% of outsourcers)
- Reasons for not outsourcing email:
 - Data Privacy and Security Risks

ECAR Alternative IT Sourcing Study, September 2009




Outsourcing to the Cloud: Risks and Rewards

- Business Officer's View: Save \$\$\$
- IT Employee's View: Cost jobs
- Privacy/Security Officer's View: Less Private/Secure
- Lawyer's View: New Liabilities
- Risk Manager's View: More/Less Risks
- Compliance Officer's View: 3rd Party Assessments
- Faculty Member's View: "I Accept" [Click]
- IT User's View: Get Over It! Mobility Is Here to Stay!




Outsourcing = Loss of Control



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Enabling the Cloud

- Economic Value
- Full connectivity
- Open Access
- Reliability
- Security
- Privacy
- Interoperability and User Choice
- Sustainability



*Envisioning the Cloud: The Next Computing Paradigm
Marketspace Point of View (March 20, 2009)*

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Why Cloud Computing Is Appealing

- Cost
- Consumerization of IT
- Scalability and availability of services
- Sustainability or green IT

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Compliance Obligations

- Federal Laws and Regulations
 - FERPA, HIPAA, GLBA, Red Flags
 - Export Controls
 - E-Discovery
- State Laws, Regulations, and Standards
 - Data Privacy and Security
 - Procurement
 - IT Architecture
- UT System & Institutional Policies and Standards
 - Acceptable Use of IT Resources
 - Data Privacy and Security
 - Intellectual Property

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Contractual Challenges

- FERPA, Privacy, and Confidentiality
- Data security and data breach responsibilities
- E-discovery
- Patent infringement
- Incorporated terms that are modifiable at will
- Responsibility for end users
- Export controls
- Service level agreements
- Suspension/Termination
- Warranties
- Indemnification
- Choice of law and jurisdiction

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Additional Resources

- EDUCAUSE Cloud Computing Resource Center
<http://www.educause.edu/Resources/Browse/CloudComputing/27148>
- 7 Things You Should Know About Cloud Computing
<http://www.educause.edu/Resources/7ThingsYouShouldKnowAboutCloud/176856>
- Alternative IT Sourcing Strategies: From the Campus to the Cloud (ECAR Research Study, August 2009)
<http://www.educause.edu/Resources/AlternativeITSourcingStrategie/177700>
- Data Protection Contractual Language: Common Themes and Examples (Higher Education Information Security Council)
<https://wiki.internet2.edu/confluence/display/itsg2/Data+Protection+Contractual+Language>
- National Association of College and University Attorneys
<http://www.nacua.org/meetings/VirtualSeminars/december2009/resources.pdf>

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