Capturing the Cloud,
Defining the Business Case

Foreword

Cloud computing is a complex, rapidly evolving phenomenon with long-term implications for IT infrastructure and the delivery of many campus services. The National Association of College and University Business Officers (NACUBO) with assistance from EDUCAUSE and some leading business partners is currently undertaking an educational initiative to prepare business officers for these upcoming changes. The initiative includes member research regarding current practices and a series of white papers, webcasts and live programs.

The following white paper reviewing the business case for cloud computing is the first of several that are being written as part of this initiative. Future papers will provide an overview of the risks related to cloud-based ventures and will address some of the issues involved in an audit of a cloud provider. The combination of initiatives will provide business officers with a solid foundation in cloud computing and prepare them for more productive conversations with chief information officers and cloud providers.

Thanks to SunGard Higher Education for authoring this white paper, Microsoft for their continued support of this discussion and the many other individuals who have donated their time and expertise to this project. We welcome feedback regarding our efforts and suggestions for future refinements in what promises to be an interesting and ongoing conversation for many years to come.

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As we continue to transform from what Gartner is calling an IT "capital economy" (one where assets that are purchased or licensed require upfront capital expenditure) to an IT "service economy" (one where service consumption drives a "pay as you go" financial model), business officers will find themselves engaged in conversations, not just with IT leadership, but with all campus stakeholders seeking the benefits of cloud computing.

We spoke with Roger V. Bruszewski, vice president for finance and administration at Millersville University, David Ernst, associate vice president and CIO at the University of California's Office of the President, and Stuart Haselden, director, information technology services at Victoria University of Wellington, about their perspectives on making a business case for cloud computing. We asked them what factors they considered, what impediments they encountered, and what risks were incurred. And we asked them how finance officers and technology chiefs might work together to make the best decisions for their institutions.

While each approached the question of cloud computing from a unique institutional perspective, all agreed that the chief business officer has a significant role to play, not only by providing appropriate fiscal oversight and counsel, but in helping shape the business case for adopting a new service model in a dynamic and sometimes unpredictable economic environment. We've distilled our conversations into six guiding principles to help business officers have a more focused and productive discussion with IT executives about the benefits and risks of moving to the cloud.

Understand what is driving decisions to explore cloud services.

Making a compelling business case starts with a clear understanding of what business problems you're trying to solve. Your institution might be looking for ways to reduce capital expenditures or maintenance costs, or simply manage costs more predictably over time. Your IT shop might be looking for ways to respond more flexibly to new service demands, particularly from students with greater expectations for sophisticated technologies. Perhaps you need a better way to scale more easily and quickly as your campus community grows. Perhaps your institution is at capacity in terms of system growth and needs to "offload" infrastructure and support responsibilities to remain viable. A different resource issue might be driving the decision—

the need for expertise you lack or the need to free up the resources you have for more critical, innovative projects.

The business case might be driven as much by policy issues as by resource issues. Moving to the cloud provides an opportunity for you to make the cost of services more transparent to participating departments by surfacing the "hidden" costs often shouldered by IT. That, in turn, can provide a more neutral framework for a frank discussion about cost sharing. As well, your institution might be looking for ways to lower its carbon footprint in support of a campus-wide green initiative.

These are largely enterprise-wide business drivers and ones that you will need to consider with executive stakeholders responsible for IT infrastructure and planning. But you might also be considering a cloud service to address a particular business need – say, for example, improving retention, or updating federal needs methodology calculations—in a timely and cost effective way. Understanding what is driving the case for cloud computing, and keeping those objectives top of mind, will help you and your CIO sort through questions about cost, risks, and benefits.

- Is this a decision driven primarily by cost?
- Is this decision driven primarily by service demands?
- Is it about needing a better way to scale more easily?
- Is it about meeting a specific business need?
- Is it about accessing expertise unavailable otherwise?
- Is it about redeploying resources more effectively?
- Is it driven by policy?

Understand the current state of your IT.

In considering a move to the cloud, consider as well the culture of your current IT organization and engage in frank discussions with your CIO about where, when, and how to bring cloud services into your current IT mix. Alternative sourcing of IT is already a part of many campus IT portfolios, but, as Philip J. Goldstein pointed out in an ECAR study earlier this year, adoption is broad but shallow.[1] Most institutions are "sampling" the cloud, and many have moved discrete IT projects to it when and where it makes sense.

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1 Richard N. Katz, Philip J. Goldstein, Ronald Yanosky, "Demystifying Cloud Computing for Higher Education," EDUCAUSE Center for Applied Research, Research Bulletin, Volume 2009, Issue 19.

CAPTURING THE CLOUD, DEFINING THE BUSINESS CASE

As the market matures, and the availability of robust options for cloud sourcing proliferate, IT organizations will need to determine not simply what can move to the cloud, but what should move to the cloud. In other words, as you make the business case for moving to cloud, you are simultaneously making the business case for what rightfully belongs in a local environment. To do that, you need to understand what your campus computing requirements are today and what they will be five years from today. Assessing what systems and processes consume the bulk of your current IT budget—both centralized and distributed—is an important step. No doubt your CIO understands the resources it takes to maintain your campus-wide ERP. But other campus systems, the advancement system or research computing, for example, may roll up into different budget lines. Without a holistic view of the IT resources you need to run your institution, making a business case for consolidating, leveraging, or outsourcing particular functions is difficult.

Moving systems to the cloud also means taking another look at the IT organization itself and how well-equipped it is to support new models of technology delivery. In building a business case, you will need to consider the business of technology services as well as the technology itself. One of our interviewees remarked that a preliminary investigation for a new CRM system revealed that only about 20 percent of total effort will be strictly technology-based; the other 80 percent will involve change management, including defining and implementing new business processes. Determining the business processes a cloud service will affect, and managing any changes to those business processes, should be figured into the overall costs of your project.

Finally, the users of the cloud service, your constituents, still expect timely and personalized support. Will that support be provided by your cloud vendor? Or is it better left to local IT resources? If the latter, how will that work?

All of these questions suggest perhaps significant shifts in the structure of the IT organization itself, shifts prompted by new ways of sourcing IT. In "Structuring the IT Organization for Cloud Services," Beth Schaefer and Melissa Woo remind us that "colleges and universities will have to develop models for providing seamless support to end users as we…move away from maintaining locally provided IT services. As part of the move toward a more client-centric and less infrastructure-centric focus, IT leaders must begin planning now in order to develop new strategies, define

new roles, and unify communications internal and external to the IT organization."[2] Understanding how these new strategies, roles, and communication methods affect your bottom line will be important to making a business case.

- What are you computing requirements today?
- Are your IT requirements growing? How fast?
- What are the most resource-heavy systems and processes you are supporting? The least?
- What could be located elsewhere? What more appropriately belongs in a local environment?
- Are you making the best strategic use of campus facilities? Would cloud sourcing help you make better strategic use of these same facilities?
- What organizational changes need to occur to support cloud sourcing? Do you have the right resources in place to manage change? To design better business processes? To cultivate vendor relationships? To deliver end user support?

UNDERSTAND TRUE COSTS.

Your CIO likely has an approach to costing out IT projects that involves categories such as the cost of hardware, networks, routers, software licensing, software maintenance, facilities costs, labor costs, Help Desk costs, and storage, backup, and recovery costs. Some of these costs are one-time capital investments in assets, some are ongoing operational and maintenance costs, and some are investments in human resources. When creating a business case for a typical software engagement, those costs are weighed against the benefit the project will bring to the institution—in better service, better processes, and better performance. Cloud pricing models, of course, work differently, but the principles of good procurement practices still apply. Documenting how this new delivery model can bring your institution better service, processes, and performance is still the driver for making a business case.

In today's still-maturing commercial cloud market, three pricing models dominate: pricing based on number of users, pricing based on usage (typically determined by metering processing power), and pricing based on the amount of data being processed (typically measured in gigabytes). What is common to all of these models is a "pay

2 Beth Schaefer and Melissa Woo. "Structuring the IT Organization for Cloud Services," EDUCAUSE Center for Applied Research, Research Bulletin, Volume 2010, Issue 12.

as you go" logic that increases or diminishes based on consumption. If usage decreases, so do your costs and vice versa. The "pay as you go" model then, offers institutions with restricted capital an attractive alternative if they are seeking to rapidly deploy a software service. And, theoretically, it offers your institution more flexibility, matching costs to actual, rather than estimated, usage.

A pricing model based on usage, however, does pose some risks. If your institution grows, so does usage, regardless of how it is measured. Today, when so many institutions are looking for ways to stabilize or even lower the costs of technology, considering long-term growth is critical.

As you evaluate cloud computing costs, it is also important to make "apples to apples" comparisons between your current infrastructure and service levels and that of your cloud vendor's. Many schools will find that they have under-invested in technology, particularly in data backup and recovery mechanisms, which are a critical component of any cloud sourcing engagement. As you grapple with costs, be sure you understand what your cloud vendor is bringing to the table that may not be a part of your current IT landscape and consider how important those services are to your organization.

Factoring Service-Level Agreements into your cost model is also important. Tracy Mitrano and Thomas J. Trappler have both published excellent articles on what to consider when negotiating contracts with cloud vendors.[3] Both are worth consulting if and when your institution decides to pursue cloud sourcing. While building the business case, be sure to consider, with your CIO, what service levels your institution deems appropriate. SLAs are not one-size fits all. And each escalation in service level will typically have an associated cost.

Looking at the cost model from the perspective of your end users raises different questions. In current IT models, your IT organization shoulders much of the cost. IT "customers"—the constituents across your campus who use its services every day—rarely pay the total cost of those services. Because cloud sourcing makes the cost of service so transparent, you have an

opportunity to distribute costs more equitably across your campus community. In making a business case for cloud computing, you will need to consider whether that scenario is even viable, given your institutional culture, and, if it is, explore the impact such a strategy would have on individual business units across your campus. It may be that you will need to work out a different way of subsidizing computing costs with your CIO and campus stakeholders and then manage that change accordingly.

- What is the cost model of your cloud engagement?
- What are the risks of this cost model to your institution? What are its benefits?
- Have you predicted costs, to the best of your ability, for one year, three years, five years?
- Have you considered how institutional growth will affect pricing over the course of the engagement?
- Are you comparing "apples to apples"?
- Have you determined what service levels are appropriate for your institution and considered their cost?
- Who will bear the cost of service and how?

UNDERSTAND ECONOMIES OF SCALE.

Economies of scale are central to arguments for going to the cloud. Attention has been generally focused on the economies of scale achievable by the cloud vendor. Costs remain reasonable, the logic goes, because vendors can aggregate and support greater numbers of users on a single platform. The idea, called "multi-tenancy," is what enables the vendor to pass those cost savings on to their customers. Making a sound business case for the cloud should be informed by a clear understanding of precisely how value is being delivered to your institution. If your vendor is moving your systems to a parallel instance of a database server, for example, rather than creating a true multi-tenant environment, then the economies of scale that vendor is capable of delivering may not be any more robust than what you can achieve with your own technology assets and resources. And multi-tenancy, while delivering economies of scale, also implies a uniformity of service that might be hard for your IT organization to adapt to. In making the business case, examining the pros and cons of that environment are just as important as understanding how economies of scale are being delivered to your institution.

Economies of scale affect the institutional side of the equation as well. While a cloud environment might be

3 Tracy Mitrano, "Outsourcing and Cloud Computing for Higher Education," August 14, 2009 and Thomas J. Trappler, "If It's in the Cloud, Get It on Paper: Cloud Computing Contract Issues," EDUCAUSE Quarterly Magazine, Volume 33, Number 2, 2010.

right for a small institution that doesn't have the resources or capabilities to achieve true economies of scale, larger institutions could very well achieve economies of scale similar to that of some cloud vendors. If that's the case, the reasons for moving to the cloud will be quite different. This difference between small and large institutions affects human resources as well. If, in moving to the cloud, you replace a DBA who is responsible for a single database, your institution will likely benefit from reduced costs. If, however, that DBA is also responsible for 10 different databases across your campus, you are potentially increasing your costs by a factor of ten (in a worst case scenario). Considering your environment holistically, understanding dependencies, and having a clear understanding of how you can achieve real economies of scale are all part of making a better business case.

- How will your cloud vendor deliver economies of scale?
- Does the vendor infrastructure support multi-tenancy?
- Where would your institution benefit from better economies of scale? DBA support? Infrastructure support? Other?
- Can your institutional IT create comparable economies of scale? How?

UNDERSTAND YOUR INTEGRATION NEEDS.

As institutions move applications into the cloud the issue of how to integrate data and applications does not simply "go away." Moving data between on-premise applications and the cloud, integrating cloud systems into your current application portfolio, and even integrating "cloud to cloud" all require a long-term integration strategy predicated on open and standardized processes. You will need a plan for continuous synchronization of your data across multiple applications. You may want to adopt recommended data standards to drive that synchronization and implement token-based authentication and a federated identity system for secure information sharing.

As you move more applications to the cloud, the question of how best to handle integration will only become more complex over time. Options to support integration vary—from integration tools to integration providers. Your CIO may need to spend time clearly identifying and articulating your business drivers for an integration strategy that delivers the flexibility you need.

- Have you identified a clear integration strategy for moving applications to the cloud?
- Do you have the right resources in place to monitor the points of integration?
- Do you have a security plan in place to protect sensitive information?
- How will maintenance of this strategy affect your overall project costs?

UNDERSTAND RISK.

In most definitions of cloud computing, delivering applications in a service model makes the infrastructure supporting it invisible to the consumer. And while there are business consumers on your campus who might prefer that the "how" be removed from their daily concerns, you and your CIO are likely not among them. Cloud computing has many benefits, but it also introduces risks, and those risks should be considered carefully while making the business case. Implicit in each of the risk categories outlined below is the overarching need for an exit strategy—if something goes wrong, which is to say, if something exceeds the level of risk your institution is willing to assume, do you know what to do next? Continuity of service is likely your first priority. Entering the cloud market without an exit strategy in place risks that continuity and, ultimately, risks the good will of your students, faculty, and staff.

- Technical challenges. Even though the market is maturing, there still remain challenges about how to secure, store, and backup data appropriately. Do you and your vendor have a security plan that meets your institutional requirements? Will data be routinely encrypted during transfer? How will data access and authorization be managed? Is there an adequate data recovery plan in place?
- Policy and compliance challenges. How will you conduct audits, manage access, support e-discovery when called upon to do so? Will locating your data off-campus—or even out of the country—subject it to different regulatory policies? Are those policies aligned with your institutional vision?
- Privacy challenges. How will you secure the privacy of your constituents, particularly students?
- Vendor challenges. Have you examined your vendor's claims, assets, and contracts with due diligence? Is your cloud vendor being sufficiently transparent

about its ability to deliver? Do you have the flexibility, contractually and organizationally, to switch vendors should you need to? Do you have a contingency plan in place if a vendor goes out of business? Is bought out by another vendor?

Further Reading

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"Cloud Computing in Higher Education," Richard Katz, Phil Goldstein, and Ron Yanosky, at http://net.educause.edu/section_params/conf/CCW10/highered.pdf

"If It's in the Cloud, Get It on Paper: Cloud Computing Contract Issues," Thomas J. Trappler, EDUCAUSE Quarterly Magazine, Volume 33, Number 2, 2010, at http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/IfItsintheCloudGetItonPaperClo/206532

"Legal and Quasi-Legal Issues in Cloud Computing Contracts," by Steve McDonald, at http://net.educause.edu/section_params/conf/CCW10/issues.pdf.

"Outsourcing and Cloud Computing for Higher Education," Tracy Mitrano, Ph.D., J.D., August 14, 2009, at http://www.cit.cornell.edu/cms/policies/publications/upload/Memo-on-Outsourcing-and-Cloud-Computing.pdf

"Shaping the Higher Education Cloud: An EDUCAUSE and NACUBO White Paper," Karla Hignite, Richard N. Katz, and Ronald Yanosky. May 2010, at http://www.educause.edu/Resources/ShapingtheHigherEducationCloud/205427

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The Tower and the Cloud, Richard N. Katz, ed. Boulder, CO: EDUCAUSE, 2008.

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