

Cloud Expo: Article

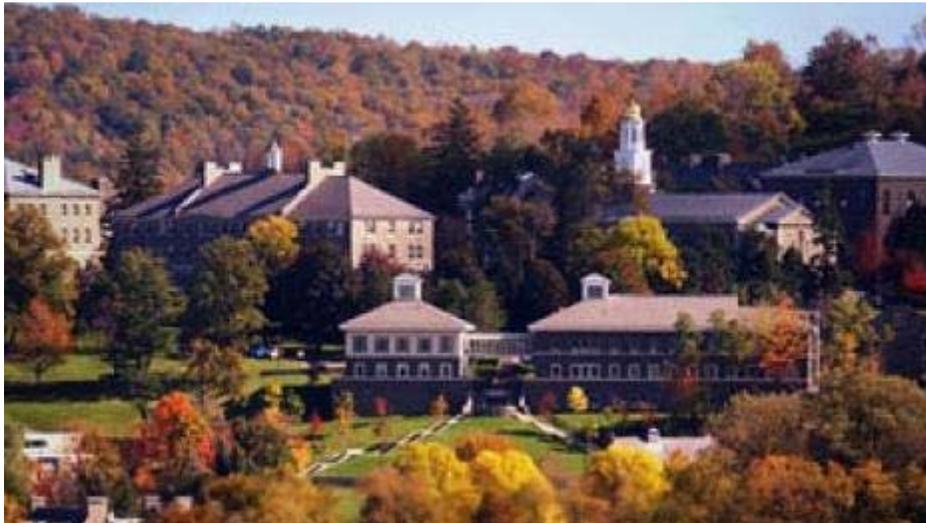
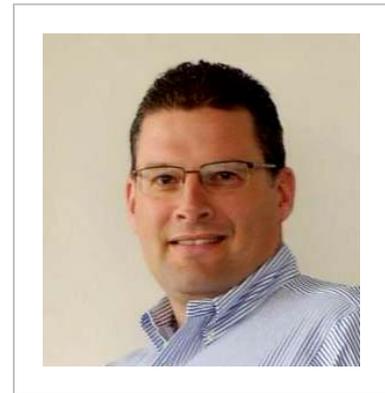
Cloud Computing in Higher Education

An academic lesson in operating faster, better and at a much lower cost

By Bob Burke, 05/04/2012

The irony about cloud computing in higher education is that most schools have used the technology to some extent but might not even realize it.

Gmail is one example. Yahoo Mail is another. The fact is web-based applications, which many schools rely on for daily communication, don't always register with most people as being part of the cloud computing trend. But they are, given that they essentially fit the layman's rudimentary explanation of the cloud: where storage and computing capacity exist (provided by a vendor) so all that is needed on a PC, laptop, tablet or smartphone is a browser. There are more "technical details" to actual cloud infrastructure, platforms and delivery, but for the purposes here, we will stick with the basic view.



There's no question that cloud computing usage has exploded and will continue unabated. An article in the September 30, 2011 issue of *Campus Technology* stated that a new industry forecast is predicting that cloud computing will

account for 33 percent of all data center traffic by 2015 - tripling the current percentage and about 12 times the total current volume.

Perhaps even more interesting is the fact that cloud computing is not only becoming increasingly popular in general but that it is growing in the education market, normally a slow

adopter of new technology. While higher education has always been viewed as an innovative force in networking and high-performance computing, major corporations such as Apple and Amazon have led the way when it comes to basic cloud computing. Two critical motivating factors are catalyzing educational institutions to investigate the cloud concept as an option since cloud computing can:

- Substantially reduce hardware, software licensing and personnel costs. This also saves on space, repair, and electrical costs.
- Provide new capabilities as they come to market without incremental costs for equipment or support. The cloud now makes "keeping current" a much more viable option. This might include collaborative efforts such as allowing multiple admissions personnel to view the same student application simultaneously.

To these reasons one might add the explosion in mobile devices that pressures IT departments, including those in the higher education environment, to provide 24/7 computing that is accessible from anywhere with no downtime. To top it off, there is also the ever-increasing avalanche of data that needs to be stored and analyzed. Given their shrinking budgets and increasing number of applicants, schools do have a major incentive to investigate cloud computing as a cost containment solution - certainly a simpler, much more affordable and practical option than attempting to undergo major expansion and rehab of the technologies they already have in place.

What Makes Cloud Computing Right for Higher Ed

The advantages that cloud computing can bring to a college or university are far-reaching; from a cost perspective the benefits can reach across campus. Cloud computing can be used in everything from the internal IT organization using the cloud for business continuity planning, or storing archived copies of data off to a cloud storage area - even students' papers and music that can be stored and retrieved whenever they want.

In the specialized areas of financial aid, enrollment, and admissions, the cloud has proven to be particularly beneficial. In the face of rising applicant pools, these areas need processes completed faster, better and cheaper to keep up with the competition, as well as meeting their own budgetary goals. The cloud helps higher education move up on the cost benefit curve because it's not dumping more work on an already beleaguered IT staff, it's rather simple to implement, and the benefits can be significant. Especially for smaller schools, the cloud can deliver a high-end functionality very quickly that these schools couldn't normally procure on their own without significant investments in hardware, integration, administration, and consulting.

Before jumping in with both feet, though, some basic questions must be answered. One of the primary concerns is how does a cloud vendor deliver an agile business solution to a higher education institution that traditionally has focused on other priorities.

Second, there is a litany of questions, mostly related to issues of security, reliability, confidentiality, and regulations at both the state and federal level. The issue of security cannot be overstated in a cloud computing scenario. In fact, since the institution's information is no longer running inside the four walls of the campus, the first concern any legitimate cloud vendor has to address is security. Most cloud vendors have addressed the security and intrusion issues at least at the level that most colleges would have addressed for themselves, if not more. In reality, security is less about the nuts and bolts of how to protect the data than the idea that administrators must determine who actually owns the data and who has access to it. All this information is being put on these machines out there "somewhere"; thus, the college administrator needs to know who is administering these machines and who has access to them.

Another concern before a college decides to adopt cloud technology: it's advisable to evaluate applications and infrastructure for vulnerabilities and ensure that security controls are in place and operating properly. Setting up an active monitoring program that uses services such as intrusion prevention, access and identity management, and security event log management to identify any security threats to the cloud implementation is a must.

There may also be significant concerns about the university's culture and how it responds to the adoption of new technologies. More to the point, it can be a struggle for college administrators to acclimate to the concept of "letting go" of their data and applications. There's a psychological impact to the recognition that the information is no longer inside the college's actual physical boundaries; it certainly changes the way CIOs look at things. Their concerns become, "How do I protect myself, and how do I get this information?" as opposed to "How many people do I need to do more backups?" Good cloud vendors will have comprehensive and proven answers to these questions.

Once these hurdles are cleared, there are baseline technology questions that must be considered. These questions depend on the technology inside the campus or the technology that's necessary to move to the cloud. In terms of the IT organization, you're potentially talking about major change and modifications to the operating environment they have been accustomed to and are comfortable in. This includes the infrastructure vendors they select, the maintenance agreements that they have in place, and technology questions from storage to networking to computing capacity. Also, on the IT side, it's critically important to consider integration: if these business applications are being moved off campus, how do they integrate back to campus?

From the business side, there is a big impact on the user community; how big depends on the equipment and systems already in place. There are campuses that are still using green screen terminals off of a mainframe to do their work. In moving to the cloud, these schools are changing from older PC-based platforms to more up-to-date ones capable of running browser sessions and multiple windows. The ROI in making these changes is significant, but there can be a great deal of legwork depending on the current environment.

While the benefits of cloud computing in a college environment can be substantial, there are pitfalls that must be avoided. The primary pitfall to be aware of begins with the actual choice of the cloud vendor. Because the field is relatively new, it's easy for small-scale, back-of-the-garage outfits to start up a cloud business and position themselves as a knowledgeable cloud vendor. Consequently, the question becomes, does the cloud vendor really understand your business and do they have the wherewithal, certification and demonstrated success in the educational environment to ensure that your information - as well as your business applications - are being managed properly?

The SaaS Analogy

The introduction of software as a service (SaaS) provided an analogous situation.

Organizations had been focusing the bulk of their attention on their data center, including its physical layout and equipment. But the emergence of SaaS required a different mindset. All of the vendor data centers would have raised floors, halon fire extinguishers, etc. But those requirements pale in comparison to how the vendor operates, how they protect data, and who has access to the servers. Those were the real critical questions that had to be asked and answered for the concept to take off - just as they are today in the cloud computing arena.

What about the legal process when the cloud is brought in? Lawyers are always involved in the procurement of any software or services, so they certainly have a role. But with cloud computing, it does shift the kinds of protection they might look for in the contract. Because the college is placing business-critical data in someone else's hands, the contractual obligations are different. There are questions about the viability of the system, how often it's updated, how long the data is stored, is the data deleted when the vendor says they're going to. In essence, when buying software on a campus, it's all about the license agreement; with a cloud vendor, the focus shifts to the service agreement and the protection of privacy, records, and information.

Switching to a cloud computing scenario can begin with "baby steps" in order to allow the school to become comfortable with the change. For example migrating more localized applications like Inquiry or CRM to the cloud allows campuses to achieve financial savings since the on-site system infrastructure - a costly and sometimes unwieldy element - is eliminated. However, the

big payoff is in the more comprehensive enrollment management areas where the value proposition for admissions and financial aid can include a major improvement in operational efficiency enabling a dramatic impact on incoming class demographics and a compelling ROI.

The benefits can be huge, and there are plenty of ways to "get your feet wet" in the cloud that can enable an environment of business agility and cost reduction, a combination not seen before in education.

About The President

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