Highlights from a recent webcast on cloud computing

WHERE IS THE CLOUD TAKING DATA CENTERS?

Institutions will find that cloud computing gives them much greater flexibility, but they must consider a number of factors when migrating.

The data center is evolving yet again. In the last 50 years, the architecture has morphed, from the mainframe to the minicomputer and then to distributed computing, with its client-server model, which has dominated in recent decades.

And now the cloud has added a new dimension to the data center, redefining how organizations store information and deliver IT services.

Not surprisingly, the trend has spread to higher education. Cloud computing is on the rise in colleges and universities, according to a February 2013 article in Campus Technology. In 2013, 20 percent of the IT budget in higher education was allocated to the cloud. By 2017, that number will increase to 33 percent.

So why are a growing number of institutions turning to the cloud? Campus Technology Senior Contributing Editor Andrew Barbour posed this question to two higher education experts during a Jan. 23 webcast, titled "Where is the Cloud Taking Data Centers?"

A primary reason is the opportunity to improve the network efficiency of the data center. As more applications become Web-enabled, institutions have more flexibility in how they deploy their resources, said Glen Bellomy, technical architect for public sector strategic programs at Symantec.

With the cloud, for example, the IT organization , might create a hybrid structure that runs parallel operations in private and hosted clouds. Essentially, he asserted, "the way applications are being put together today give [IT organizations] the ability to expand resources."

Capital leverage is another factor driving migration to the cloud, according to Terry Doub, director of network operations and data center at Louisiana State University.

Traditionally, development and testing is a slow, cumbersome process. Institutions must acquire hardware in an operational environment in order to launch a new application or reconfigure an old application. Now, however, campuses can perform some of these functions in the cloud. This not only speeds deployment but it reduces a number of capital costs.

"In addition to the capital investment savings on the front end," said Doub, "[institutions] also save on personnel required to administer the equipment, plus space, power and cooling costs."

Bellomy agreed. "We can experiment and centralize and pilot a program without having to do a capital investment," he added, "And then we can go to production and decide whether we want to

■ ON THE DOTTED LINE: SERVICE-LEVEL AGREEMENTS

When it's time to hammer out the contract with your cloud provider, make sure you clearly define your terms. In a Jan. 26 webcast, Louisiana State University's Terry Doub suggested considering the following factors before you sign a service-level agreement.

■ What are the guaranteed data retrieval rate and associated fees? Are the fees paid upfront or on the backend?

■ What is the guaranteed uptime? This is especially important for applications.

■ What are the exit provisions and requirements for terminating the contract? How much notice will you need to give the provider? Be sure you have enough time to acquire another place to move that data, said Doub.

■ How much notice is required to expand the amount of storage under contract? What are the associated fees for this upgrade?

■ What are the penalty provisions for a data breach? This is important especially if the fault lies with the service provider.

■ Are there issues related to privacy, storage location or security protocol?

■ Will you require a certain tier of data center to store data? Tier refers to the amount of redundancy built into the data center.

leave it in the cloud or bring it back inside."

A third important driver is resource allocation. While storage costs have consistently dropped in recent years, said Bellomy, institutions continue to consume storage at an increasingly fast rate. This can lead to escalated costs for the data center.

"As we look at the combination of consumption and the aging of the existing storage we have, it becomes a very big cost for most data centers." explained Bellomy. "Being able to leverage low cost online storage [can help contain] data center costs."

However, institutions need to consider several factors as they plan their migration to the cloud, Doub and Bellomy said.

WHO OWNS THE DATA?

Who owns the data in the cloud? Does it belong to the institution—or the user? The question may not be as simple as you think, according to Doub.

The quick answer, he said, is the university. But there are a number of scenarios in which the user or another entity could argue for ownership of the data, he said. For instance, if a faculty member is collaborating on a project, it's possible that he or she would own the data, and not the university. Or if the faculty member is working on a project with the National Science Foundation, that data could be public domain, he said, "depending on what they're working on and what stage of the process they're in."

This question of data ownership has been the topic of recent conversations at LSU. The university is in the process of creating a Dropbox-like service for tenured faculty. These individuals would be able to store data and files in the cloud. The institution is working through the details now of defining the parameters of data ownership and how it will retrieve data, when faculty members leave.

SECURITY IN THE CLOUD

Security is a primary concern — and holdup — for many institutions considering a move to the cloud. In a recent study of higher education IT professionals, 52 percent reported that "security of proprietary data and applications" was a main concern delaying their move to the cloud.

"Security is definitely a big issue," agreed Doub, "especially with sensitive, private data."

Expect your chief security officer and university counsel to have input on the decision, he said. They will want to know when data is encrypted — before it's sent, along the path, in the cloud or a combination of these — and who manages the keys. To avoid headaches and hiccups in the process, "make sure they're in the loop early when you're investigating cloud services," he advised.

Another factor to consider: how to segment access for the different types of data stored in the cloud. "You'll have sensitive administrative data that has more security requirements than just a shared [drive] where people store work product," explained Doub.

MAKING THE MOVE

Institutions have a number of factors to consider as they plan their migration to the cloud.

The first technical issue to tackle is deciding how to "get data to the cloud from the campus," said Doub. Options include using the commercial Internet, purchasing a dedicated circuit — which can add costs — or possibly using an Internet 2 connection if it is available.

Doub advises schools going the commercial Internet route to ask questions beforehand, to ensure the provider has sufficient bandwidth to support data traffic.

"Can [it] handle the types of traffic trying to get to the cloud?" he asked. "Also, is flow constant or spiked? For instance, if you're doing backups in the middle of the night — on a campus network when you have to contend with student traffic — it may not be a good thing. It's not like a business model when folks go home during the day. You don't have that typical traffic at night and can double your bandwidth use. That may not be the case in a university environment."

A CHANGED PERSPECTIVE

The cloud has redefined the data center and created new perspectives for campus IT organizations.

"As we talk about data and applications, we also begin to see that our IT operational structure has to shift its view," Bellomy noted. "In the past, it was about keeping the data center up and running. We were talking about power, air conditioning, footprint, etc. Now we're talking about connectivity and what provisioning for external cloud-based resources. The systems begin to cross over and integrate and it shifts our skill set requirements."