The Multiple Personalities of Cloud Computing

The following excerpt is based on an interview conducted at the EDUCAUSE 2009 annual meeting by Gerry Bayne, EDUCAUSE multimedia producer. To listen to the full podcast, go to <http://www.educause.edu/er/Cloud>.

GERRY BAYNE: I’d like to start by asking each of you to give your definition of cloud computing.

MELISSA WOO: I find the term cloud computing to be extremely overloaded. In fact, a recent report by McKinsey & Company identified twenty-two different definitions for cloud computing. The way I look at cloud computing is as a source of services that might be external to a local campus—in other words, services that come in over the Internet and that are not run in our own organizations. However, there are other types of cloud computing. There are private clouds, which might be running on a campus, and there are also multi-institutional clouds, which might be a consortium of different institutions.

MICHAEL DIECKMANN: I’d agree with that. But I think another element that’s very essential to the cloud definition is this idea that the infrastructure is being delivered at this extreme level of sharing, what some folks call the multi-tenant model. For example, when an institution is using Google Mail, that institution, thousands of other institutions, and hundreds of thousands of end users are all sharing a single, very distributed, very large-scale infrastructure. So that’s kind of a new twist on outsourcing. In the past, we’ve outsourced systems in ways that allowed us to still have a good handle on where the outsourced system is. The new paradigm of the cloud is we’re not sure where it is. It’s often in many places, scattered all around the globe in bits and pieces.

BAYNE: Why are colleges and universities embracing the cloud so strongly? What’s the momentum?

DIECKMANN: I don’t think everybody is on board. A lot of the momentum is economic. The economies of scale in the cloud model bring services priced in a totally different way. In many cases, these services are free, at least for now, to institutions. There may be hidden operating costs, but when an institution signs the contract on the dotted line, there’s no cost associated.

When looking at resources that are shrinking and budgets that are being cut back, where will we focus scarce staff talent? It’s awfully attractive to look at some services, particularly the ones that are more commodity-oriented, and just outsource that problem. Some of the folks in the cloud are doing this very well. I would argue that in some cases, they are doing as well as or better than we can do inside our institutional walls—and at a very attractive cost.

WOO: I think there is an examination of what our core competencies are as higher education institutions. So we look at things that are a commodity or things that maybe we shouldn’t be in the business of doing. Are we actually experts in running data centers? Maybe we shouldn’t be concentrating our resources on that. Maybe we should be concentrating our resources on the actual missions of our campuses—usually teaching and learning and, in some cases, research or outreach.

BAYNE: It sounds like this is a break from the traditional “we build everything, and that is our identity.”

WOO: But there’s also a danger of losing our identity if we put too much into the cloud. That’s something that my campus is weighing. The campus looks at the requirements of stakeholders before it decides on a sourcing strategy. In some cases, going to the cloud will be just fine. But in other cases, we might want to keep things internal, in order to help build our brand and help build our identity. We are very interested in making sure that we attract and retain students and that we attract and retain good faculty as well.

BAYNE: Do you have examples of something that you might want to hold on to but that other institutions might outsource?

WOO: At UW-Milwaukee, we’ve kept our e-mail and calendar system internal, mostly for the calendaring and integration because doing so has allowed us to build on our sense of community as a campus. One of the things we recently deployed was something we call Subscription Center. Using this, units on campus can put up event calendars, and then other members of the community can subscribe to whatever calendars are of interest to them. For example, I can subscribe to the calendar that lists the performances that are going to show up at our performing arts center. There are also calendars for our First-Year Student Center. These might be of interest to our first-year students and could aid, we hope, in retention.

BAYNE: What do you think colleges and universities should hold on to? What do you think they should let go of?

DIECKMANN: I don’t think I’m a cloud fanatic, but I do think that the parameters are shifting and that, at some point, the burden of proof is going to shift as well. Whereas now an organization
might need to justify moving a service to the cloud, I think in the future the burden of proof is going to be to justify why a service is being kept in-house.

BAYNE: If you look to the future, what skills are IT staffers and IT professionals going to need to adopt in order to roll with these changes? And what is the IT organization going to look like?

WOO: I see IT professionals needing the skills that are going to allow them to communicate and collaborate more with faculty and student stakeholders. I also see a need for skills in dealing with external vendors, because we are going to be negotiating and working with service level agreements. There will also be the need to handle things not at the server-hugger level but at a higher level, such as in project management.

BAYNE: Do you see the IT organization becoming leaner?

DIECKMANN: I don’t think we’re going to be leaner overall. I think we are just going to look different. For example, large parts of our staffs right now are involved with running data centers—running very large, very complex infrastructures. We may be starting to see that activity become industrialized, for lack of a better word. Rather than data centers being a cottage industry within our IT organizations, the folks in the cloud are going to be running very, very large-scale, factory-model data centers. So perhaps we’ll do away with a large part of that piece of our operation. We’re going to be concentrating instead on trying to tie all those services together into some coherent enterprise computing environment that still makes sense, focusing on problems like secure integration with external systems and electronic identity management.

BAYNE: What are some of the challenges in implementing and using cloud computing?

DIECKMANN: There is a whole host of challenges. Risk management is key, particularly if institutional data is being held in the cloud. There are all kinds of contractual things to look at in that regard, with various implications. Is the institution entrusting FERPA-controlled data to someone? If an institution is located in a public records state and its public records are now in the cloud, can it properly produce those records when needed?

BAYNE: Are these things being worked out on a standardized basis? Are we coming up with some best practices and rules?

DIECKMANN: I’m encouraged to see that we’re becoming more systematic. Some service providers are starting to provide contracts that have standards in place from the beginning. Google is an example. Over many iterations of working with a number of colleges and universities, Google is now able to present an evolved Google Apps for Education contract right out of the gate.

WOO: I think lying beyond the data security and privacy issues is the support issue. We’re worried here not just about institutional clouds or the choices that an institution makes. We also have, on our campuses, individuals who are choosing all kinds of different cloud services. So the question is, how do we support those individuals, knowing that there could be hundreds of cloud services being used? There could be a different cloud service for each person or multiple cloud services for each person. I think that’s going to be a real challenge going forward.

BAYNE: What do you see as the future of cloud computing for higher education?

DIECKMANN: We are going to see multiple personalities here, if I can characterize it that way. Institutions tend to be slow adopters. We’re kind of late-comers to this party and are still being very cautious. I think we’re going to be slow but steady in moving our enterprise systems into the cloud. On the flip side, our primary clients are students and faculty, who are embracing the cloud vigorously—particularly the students, who are coming to our institutions with much of their IT infrastructure and services intact. Much of what we do ahead will be reacting and adapting to IT sourcing choices that are driven as much by our clients as by the IT department.

WOO: We simply need to make thoughtful choices based on what our stakeholders need. We should look at their requirements first. If those requirements are best served using services run out of the cloud, then we should choose those. If there are some services that we need to keep in-house, we should choose those. And if there are ones that we should provide through a consortium of colleges and universities, then that’s the way we should go.

By MELISSA WOO and MICHAEL DIECKMANN