INFORMATION TECHNOLOGY
IN HIGHER EDUCATION

2013 SURVEY OF CHIEF INFORMATION OFFICERS
EXECUTIVE SUMMARY
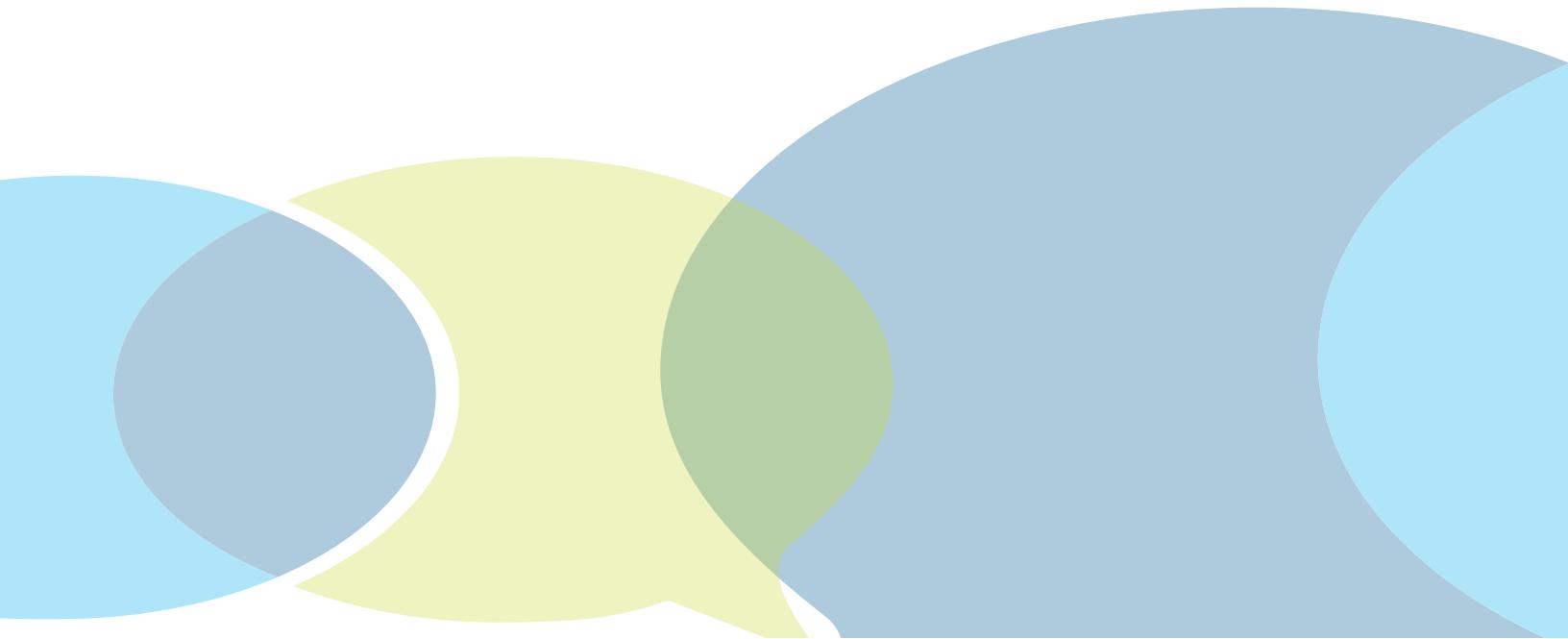
Leadership Board for CIO's

Jeff Barnes,
*Queens College,
CUNY*

Dr. Jerome P. DeSanto
and Robyn Dickinson,
*University of
Scranton*

Dr. Jan Fox and
Dr. Ed Aractingi,
Marshall University

Dr. Vince Kellen,
University of Kentucky

Marcus Kerr,
Texas Wesleyan University

Dr. James Lyall and
Ben Zastrocky,
*Metropolitan State
University of Denver*

Dr. David Rotman,
Cedarville University

Dr. Tina Stuchell,
University of Mount Union

Dr. Lew Temares,
University of Miami

Doug Wells,
*Northern Kentucky
University*

Dr. Michael Zastrocky,
LBCIO

Sponsored by **workday**®

Designed for organizational change

workday®

Workday's cloud-based administrative applications include key components that stay current with your institution's changing needs. **The Enterprise Cloud for HR and Finance.**

Workday customers include: Brown, Cornell, Georgetown and Yale.

TABLE OF CONTENTS

Introduction

INTRODUCTION

Chief information officers (CIOs) in higher education face an overwhelming task today as they must manage tight budgets, increasing demand for services and support, and a loss of experienced people in the face of retirement or attrition with no replacements. They must also contend with new technologies that are declared winners or losers before being tested on campus. Although information technology (IT) leaders must understand new and emerging technologies, CIOs don't want to get caught making a decision that could bring them great headaches or even cost them their job. However, they can't stand still and sit on current and past performances and applications. They are responsible for IT assets that are increasing in value and that support all faculty, staff, students, trustees, alumni, and other constituents. Knowing what peers are doing and thinking can help CIOs sleep better at night, which is the main purpose for the 2013 LBCIO CIO Survey for Higher Education.

This survey was developed as a global survey to provide CIOs with key metrics to help them do the work of managing and planning IT for their institutions. Results from the survey are shared only in the aggregate, with no cost to members and all CIOs who complete the survey receive a copy of the annual report. Survey numbers are not meant to provide market research but simply tell the story of what CIOs are currently doing and their thoughts about the future.

To get a complete picture of IT on campuses today, the Leadership Board for CIOs surveyed a broad range of colleges and universities in April 2013 to collect strategic and tactical information on major issues that higher education CIOs face. Survey questions included financial and budget information for IT; organizational and governance questions; personnel and staffing questions; infrastructure and networking questions (including security issues); and questions about consumerization, administrative computing plans, strategic planning for IT, academic uses of information technologies, and plans for cloud computing, MOOCs, Big Data and other new and emerging technologies. Dr. Michael Zastrocky, Executive Director of LBCIO, was assisted by the following LBCIO board members: Dr. Ed Aractingi, Director, Marshall University; Jeff Barnes, Deputy CIO, Queens College, CUNY; Dr. Jerome P. DeSanto, CIO, University of Scranton; Robyn Dickinson, Deputy CIO, University of Scranton, Dr. Jan Fox, CIO, Marshall University; Dr. Vince Kellen, CIO, University of Kentucky; Marcus Kerr, CIO, Texas Wesleyan University; Dr. James Lyall, CIO, Metropolitan State University of Denver; Dr David Rotman, CIO, Cedarville University; and Dr. Tina Stuchell, Director of IT, University of Mount Union; Doug Wells, Director of IT, Northern Kentucky University; Ben Zastrocky, Director of Educational Tech Center, Metropolitan State University of Denver in the analysis of this year's survey results.

The 2013 LBCIO survey added a few questions about CIO demographics and others that were ranked high on the LBCIO list of top issues facing CIOs in higher education in 2013. These include questions concerning CIO succession planning and questions about the planning for and use of MOOCs and Big Data.

ABOUT THE LBCIO

The Leadership Board for CIOs in Higher Education (LBCIO) Survey is a project of the LBCIO, lead independently by Dr. Michael Zastrocky. When first fielded in 2010, the survey was a joint effort by Dr. Zastrocky and The Chronicle of Higher Education, Inc. Dr. Zastrocky publishes this global survey to provide CIOs with key metrics to help them do the work of managing and planning IT for their institutions.

OVERVIEW OF RESULTS

Knowing what other CIOs are doing and thinking brings some degree of comfort and assurance to CIOs as they plan for the future. In this year's survey, we find CIOs more optimistic about their IT budgets and strategies for increasing available resources. We also find for the first time in the past four years CIOs are more often listing actual "new and emerging technologies" and new strategies for how best to plan for the future. During the past few years, CIOs listed projects that were not necessarily new but important technologies in the list.

Budgets continue to remain tight as more than 60% of institutions report their institutional budgets decreasing or staying the same. Staffing continues to be an issue for many institutions as increased numbers of CIOs reported that their IT staff size decreased from last year. Many CIOs are cautiously optimistic about the use of shared services and collaboration to improve life and budgets on some campuses, and movement to the cloud continues to grow, but with caution on the administrative application side. The consumerization movement or BYOD continues to grow, and 98% of CIOs report that consumerization is significantly or moderately affecting their institution. The growth in the use of cloud computing continues, but more with academic resources and applications than financial applications. Overall, the data show that CIOs face major challenges but seem to be continuing to provide service and support for an increasing number and variety of applications and constituents. There also seems to be an optimism about the care and feeding of current systems and growth for the future.

INSTITUTIONAL AND CIO CHARACTERISTICS

2013 SURVEY RESPONDENT DEMOGRAPHICS

The 2013 survey was sent to just over 1,000 CIOs globally, and the response rate was almost 24%.The survey was conducted for a period of 3 weeks during April and May, 2013.

Consistent with prior years, CIOs from public institutions represent the majority of the respondents (65%) vs. private, non-profit institutions (34%). This year,

respondents from Research Universities and Doctoral Granting Institutions are the majority at 51%, with four-year institutions representing the next largest group of respondents at 38%. Two-year institutions represent only 11% of the respondents. However, that number is reflective of the global nature of the survey and that most of higher education outside North America is built around a federal model with no community colleges. Size of the responding institutions varies, with 30% having enrollment of 10,000-25,000 students, 21% at more than 25,000 students, 18% with 3,000 students or less, and almost 31% falling in between 3,000-10,000.

The majority of respondents themselves are male (75%), between the ages of 46-55 years (39%) or older than 55 years (45%). They generally hold a master's degree (53%) or terminal degree (27%). Their experience as a CIO varies widely with the number of years that they have been in the role reported at less than five years (22%), 5-10 years (28%), 10-15 years (25%), and greater than 15 years (25%). Similarly, the years they report working in their current position ranges from 1-5 years (32%), 5-10 years (32%), and 10 years or more (28%).

CIO Characteristics

Age
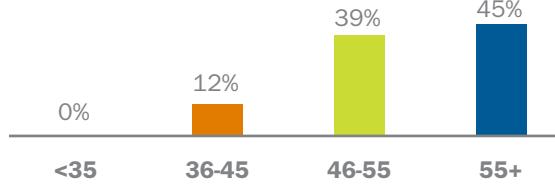
Gender
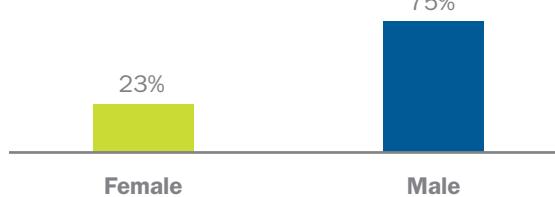
Total Years as a CIO
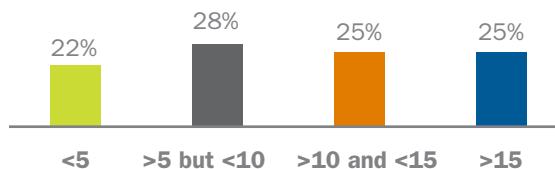
The IT organizations they lead are responsible for providing the following centralized services for their institutions.

Administrative applications and support	99%
Networking and telecommunications	98
Help Desk	97
Applications programming	93
Classroom technology support	91
Academic applications and support	89
Media services including video	72
Research computing	54

A smaller portion also includes Library Management (15%) and Institutional Research (14%) among their central IT functions.

HIGHER EDUCATION CIO SUCCESSION PLANNING

Several years ago higher education institutions began seriously looking at business continuity planning due to the increasing threat of terrorist activities and severe weather events both of which could disrupt the educational enterprise. However, senior administrator succession planning, as a subset of business continuity planning, has never gained traction in higher education. In particular, relying on both anecdotal and limited empirical evidence, it's been reported that about 50% of the higher education CIOs are planning to retire within the next 10 years. This triggers questions about the readiness of CIO successors in higher education to maintain continuity during a transitional phase or to actually take the reins of the IT organization moving forward. Without proper leadership readiness such a gap could spell problems for higher education institutions. To attempt to gain some perspective on this question we introduced an inaugural set of questions in the study about CIO succession planning.

Less than 10% of the respondents indicated that succession planning for senior administrative positions at their institution was a high priority, with almost 80% indicating that it was a moderate or low priority, illustrating the point well that the majority of institutions do not see this activity as an integral part of business continuity planning. In contrast, however, over 85% of the CIOs indicated that they had high or moderate interest in developing a CIO succession plan. Supporting this contention, 68% of the responding CIOs indicated that they had identified one or more persons that they would like to mentor as part of a succession plan.

In cross tabulation of questions the data shows no difference in attitude about succession planning between male and female CIOs. However, the data does illustrate that older CIOs are somewhat more likely to be interested in succession planning than their younger counterparts.

Interestingly, responding CIOs selected desired traits in a successor that would influence their choice in a successor. In the chart that follows notice that the top three traits are management/leadership acumen at 86% followed by interpersonal abilities at 82% and Intelligence/ability to learn at 76%, while technical skills ranked 5th at 54%, and education/credentials ranked last at 30%. This data is consistent with the trend of de-emphasizing technical prowess and the underscoring of "soft skills" in the recruiting of higher education CIOs.

Management/Leadership Acumen	86%
Interpersonal Abilities	82
Intelligence/ability to learn	76
Collaboration/Political Skills	71
Technical Skills	54
Business Knowledge	52
Education/Credentials	30

How to effectively accomplish the mentoring of new CIOs is dealt with by posing the following possible "building blocks" as depicted in the chart on page 6. Leading the list of the most essential activities are "Opportunities to lead key projects, etc." at 91% followed by "High levels of collaboration/knowledge transfer at 80% and "Shared leadership/decision-making" at 79%. The sharing of scholarly activities paled in comparison at 20%. This data seems to indicate that the optimal way to train aspiring CIOs is in the practice.

Opportunities to lead key projects, processes with guidance as needed	91%
High levels of collaboration/knowledge transfer	80
Shared leadership/decision-making model	79
Exposure of the mentee to senior administrative discussions	78
Carefully planned professional development program	40
Shared scholarly activities (papers, presentations, conferences)	20

One of the more controversial and intriguing issues to consider is whether or not the institution would ultimately honor the succession plan by extending beyond the transition period (following the departure of the incumbent CIO) to appoint the selected mentee as the permanent replacement CIO. The vast majority of the CIO respondents expressed skepticism with almost 50% indicating that the institution's decision could go either way, while about 40% indicated that the institution would likely hire a candidate from the outside to replace the CIO. This data may point to a reason why more CIOs are not currently active in preparing a successor for their role.

It will be interesting to build upon this data set in the months and years to come to ascertain whether or not CIO succession planning in higher education becomes more important and commonplace.

FINANCIAL AND BUDGET PLANNING

Growth is becoming the norm for institutional budgets. For the third consecutive year, "Growth from the prior year budget" was the most common response to the question on current institutional operating budgets (41% in 2011, 43% in 2012, and 47% in 2013). When asked what they expected to happen next year, 46% of CIOs anticipate an increase from the current year—once again, the most frequent response. While the budget situation might be improving somewhat for institutions overall, private, non-profits are faring the best. More than half (55%) of private/non-profit institutions

reported growth this year compared with just 42% of public institutions.

In 2013, 47% of institutions reported that their institutional budget increased from their prior year budget, 33% reported that their current budget stayed the same, while only 21% indicated that their institutional budget decreased, down from 34% reporting a decrease in 2012.

Optimism prevails as 82% of institutions expect their budgets to either grow (46%) or stay the same (36%) in the year ahead.

BUDGETS FOR INFORMATION TECHNOLOGY

When it comes to budgets, IT appears to be achieving one of its major objectives—alignment with the institution. Overall, the changes in current IT budgets mirror those for institutional budgets and a significant majority (73%) of CIOs indicated that their IT strategic plan is linked or incorporated into the budgeting process. This year, 44% of institutions reported that their IT budgets increased from their prior year's IT budget, up 3% from 2012. There was also a 6% increase over the prior year in the number of institutions reporting that their IT budgets stayed the same in 2013 (36%). The best news for CIOs might be the 10% drop in the number of institutions reporting a decrease from their prior year IT budget. In 2013, 19% reported a decrease, contrasted with 29% in 2012.

Regarding future IT budgets, private, non-profit institutions have the most positive outlook. The majority (55%) of these institutions expect growth in their budget next year while only 40% of public institutions expect an increase.

CAPITAL FUNDING SOURCES

These days, the IT budget is not the only place institutions look to when funding IT capital expenditures. Almost a quarter of the institutions (24%) reported that no capital expenditures were included in the IT budget. Even though paying all capital expenditures out of the IT budget was still the most common practice, the trend looks to be moving away from this (from 56% in 2011 to 48% in 2012 to 43% in 2013) and toward the practice of including some, but not all capital expenditures in the IT budget (from 26% in 2012 to 33% in 2013).

For those institutions that were not using their IT budget for capital expenses this year, they were most likely

to find the needed cash in a general fund (66%), in restricted funds (34%), or through a special, project-specific fee (36%).

TECHNOLOGY FEES

Using fees to help cover expenses is a standard practice in higher education and one that is often applied to technology. In 2013, the majority of institutions charged either a single student tech fee each semester (49%) or tagged specific courses with a tech fee (4%).

While a significant number of institutions overall (46%) refrain from this practice, students at private, non-profit institutions are less likely (54% did not charge a tech fee) to pay a tech fee than their counterparts at public institutions (42% did not charge a tech fee).

But just because a student tech fee is charged does not mean that all the money collected will go directly into the IT budget. The majority of the time the funds went to either a general fund (39%), were split between a general fund and the IT budget (19%), or went into a course or department budget (6%). At 42% of the institutions, all the money collected from the tech fee went directly into the IT budget this year.

STRETCHING IT FUNDING

After years of toil and thousands of dollars spent in efforts to find ways to "do more with less"—an aim that seems to defy logic—CIOs are being asked a new question nowadays, "How can IT do more with the same?" The top answer to this question on stretching IT funding in 2013 was increased efficiencies and more centralization of support and services (82%), followed by cloud computing (65%), shared services/collaboration with other institutions (58%), and greater use of open source (33%). Rounding out the list were the less creative but commonsensical strategies of doing more with more (new revenue – 23%), doing less with the same (cutting services – 21%), and doing the same with the same (no new strategies – 3%).

When the IT budget had to be cut, the most popular expenses to cut were none (37%), trailed by personnel (36%), maintenance/replacements (36%), and new initiatives (34%). Cuts to services (26%) and software licenses (20%) were less frequently selected.

For those CIOs who believe their IT departments will be faced with a flat or declining budget next year, renegotiating contracts was the most appealing option

(53%) for reducing costs. Other prevalent tactics included cutbacks in services and support (44%) and reducing IT positions through non-replacement of staff when they leave (40%) and eliminating positions (23%). Increased use of chargebacks (16%) and increased student fees (8%) were less common approaches.

IT ORGANIZATION AND GOVERNANCE

STAFFING

CIO staffing patterns have remained somewhat stable for the last three years of the survey. This year's survey hints of an IT hiring recovery. Even though 42% reported their staff remained the same, 34% actually showed an increase. This same trend continues with a similar number (32%) predict they will have an increase in their staffs for next year. Most institutions (52%) expect to be constant with the number of employees with only 16% anticipating a reduction in staff for next year.

Has your Full Time IT staff:

Stayed the same

	42%
	40
	43
	56

Decreased in the past 12 months

	24%
	30
	26
	28
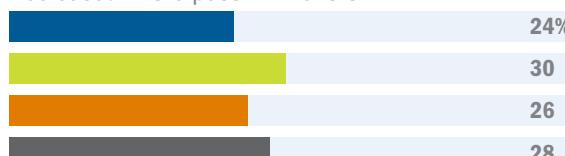
Increased in the past 12 months

	34%
	31
	31
	16
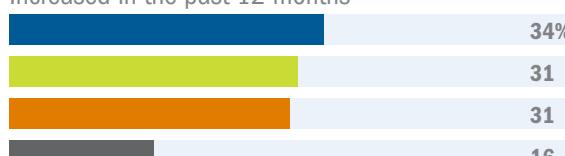
2010 **2011** **2012** **2013**

Although institutions do stress the need for experiential education for their students, the vast majority (57%) of IT departments report that 10% or less of their work force is based on efforts of student workers. However 28.8% do anticipate an increase in the use of student workers for next year.

OUTSOURCING OF SERVICES AND SUPPORT

More than half (53%) of the CIOs state their outsourcing has increased over the last two years, but 40% reported no increase. E-mail/social networking communications leads the way at 70%, followed by academic applications (45%). Rarely is lab maintenance and support outsourced (4%). Four-year institutions reported the greatest increase (66%) for outsourcing over the last two years.

Do you expect your use of outsourcing of IT services or support to:

Stay the same

	13%
	21
	39
	28
	48

Decrease in the next 2 years

	5%
	0
	0
	0
	4

Increase in the next 2 years

	83%
	79
	61
	72
	48

- ■ Research University
- ■ Doctoral Granting
- ■ 4-year Institution with Master's
- ■ 4-Year Institution
- ■ 2-Year Institution
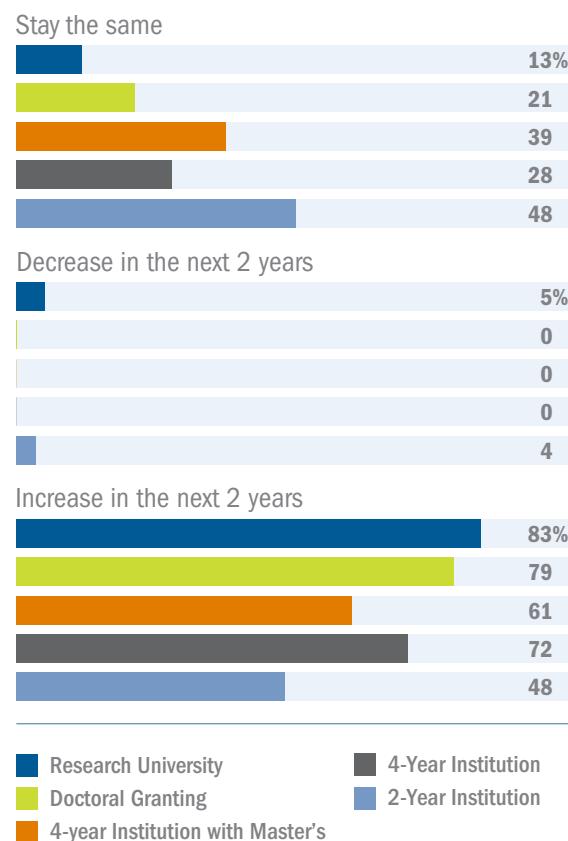
Outsourcing is predicted to increase (71.6%) in the next two years with a greater increase for research (83%) and doctoral granting institutions (79%). While, only 48% of the two-year institutions are predicting an increase in outsourcing over the next two years. Data center was added to this year's survey for future outsourcing and 60.2% of the CIOs plan on moving in that direction. Many campuses have already moved e-mail and social networking to the cloud, so there is less future demand (68.1%).

Which of the following are most likely to be considered for moving to the cloud or being outsourced in the future?

E-mail/Social/Communications

	68%
	84

Data Center

	60%
	0

Academic Applications (i.e. LMS)

	39%
	44

Administrative Applications (ERP)

	31%
	36

Web Development/Applications

	29%
	39

Security

	6%
	6

Other

	6%
	11

Networking

|	
	5%
	6

2012 **2013**
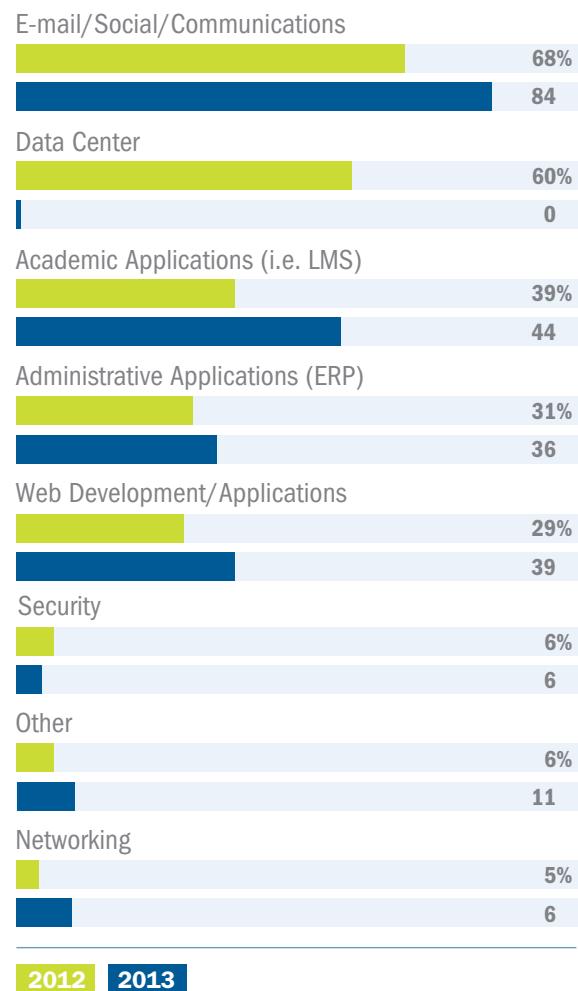
ORGANIZATION

CIOs are reporting their role is becoming more strategic and 32% report directly to the CEO (President, Vice Chancellor, etc.). Female CIOs were more likely to report to the CEO (40%) than any other category.

Governance models are very important to CIOs (68%) and more than 82% consider assessing and improving IT governance either moderately or very highly prioritizing them at their institutions. The vast majority of IT governance structures include user groups and high level committees that are used to aid in IT decision making. Few CIOs (19%) see these governance structures as highly effective and are seeking improvement in their existing models. More than half of the reporting CIOs have an IT governance model that includes a formal process for making and evaluation of requests.

Where does the CIO report by sex?

CEO (President, Vice Chancellor, etc.)
- 40%
- 29

CAO (Chief Academic Officer)
- 19%
- 26

CFO (Chief Financial/Business Officer)
- 21%
- 22

COO (Chief Operating Officer, Executive Vice Pres.)
- 13%
- 19

2 Levels from CEO
- 6%
- 2

Female   **Male**
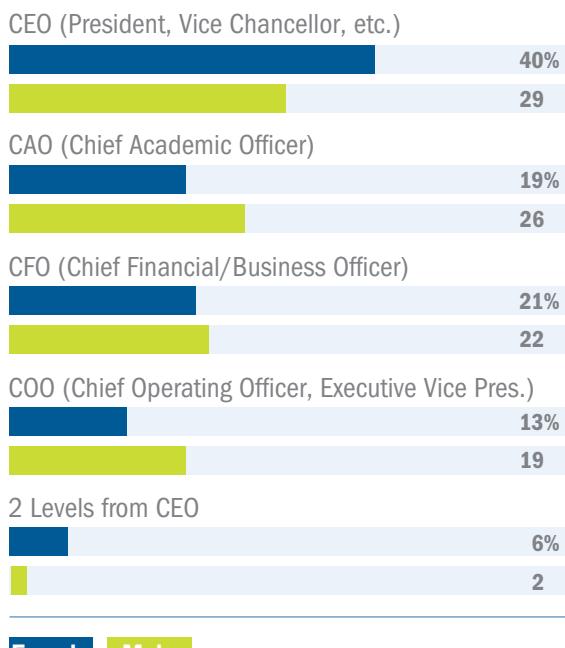
Similar to last year's survey, Business Process and Strategic Planning were the leading areas in which the CIO reported adding the most value to the institution. Discussions concerning MOOCs and Leveraging "Big Data" were added to the 2013 survey. It is evident that these topics have become major areas for CIOs to add value to their institutions in current and future campus discussions.

In which of the following areas does the CIO add value to the institution?

Area	Value
Other	8%
Managing non-IT functions	29
Leveraging "Big Data"	43
Discussions concerning MOOCs	46
Modeling and leading project management initiatives	68
Teaching and learning innovation	74
Strategic planning at the institutional level	88
Business process improvement	91

CONSUMERIZATION OF IT

CONSUMERIZATION: RAPID CHANGE OR NOSTALGIA?

Typical conversation that occurs when information technology professionals socialize would include some references to the rapid change in technology and the proliferation of devices entering the workplace. Is this kind of conversation indicative of real change, or is it a reflection of "good old days" thinking where idealizing of the past increases as time moves along?

The Leadership survey results indicate that these comments are more than sentiments: consumerization is having a major impact on institutions. Over 48% of the respondents indicated that the impact was significant, with another 50% indicating moderate impact. Are these perceptions grounded in reality?

A short review of two technology areas will demonstrate that the survey results are accurate reflections of reality. Consider the evolution of mobile phones, moving from niche-market devices in their first 20 years of existence to must-have devices in recent years:

Year	Event
1973	First hand-held cell phone
1983	Motorola DynaTac phone
1993	First person-to-person SMS message
1996	USA launch of CDMA
2007	First Apple iPhone
2008	First Android phone
2009	HTC Droid
2010	USA launch of GSM/LTE
2012	Worldwide mobile phone sales hit 712 million units
2013	Worldwide mobile phone sales hit 426 million units in Q1

Similarly, tablet computing technology has existed since the late 1980's, but has exploded in the last three years:

Year	Event
1988	Touchscreen device
1989	Personal digital assistant
1992	Early ebook reader
1992	"Tablet" moniker appears
2001	Microsoft predicts popularity of tablets
2010	Apple introduces iPad
2010	Android tablets introduced
2013	Worldwide tablet sales hit 49 million units in Q1

Higher education institutions are now faced with supporting mobile phones and tablet devices with capabilities that were fantasies just 4 or 5 years ago.

CONSUMERIZATION IMPACT

Respondents to the LBCIO survey indicated that consumerization was having a significant (48%) or moderate (51%) impact on their campuses. Only 2% of the respondents indicated no impact from consumerization. The ratings did vary somewhat, being shifted more towards "moderate" impact by 76% of CIOs from small-to-moderate sized institutions (3,001-5,000 students). Similarly, CIOs from four-year institutions with masters degree programs selected "moderate" impact 66% of the time. It might be speculated that institutions in this size range and Carnegie classification have had the financial resources over the last few years to build an appropriate infrastructure while being small enough to do campuswide deployments.

Of those respondents who indicated some impact from consumerization, over 85% identified impacts on academic applications/services/support and on networking/security. 71% mentioned some impact on administrative applications/services/support.

One of the chief benefits cited (identified by 80% of respondents) for the consumerization is freedom of choice for students, faculty, and staff. Freedom is a

highly-valued characteristic in higher education, so having freedom of choice for technology is welcomed by most of information technology's constituents. Interestingly, the second most-cited positive impact (50%) was competitive positioning of the respondents' institutions. This high rating seems to reflect the pressure that CIOs are feeling to keep their institutions on the leading edge of technology.

The three consumerization problems cited most often were the need for greater security (92%), for increased bandwidth (71%), and integration with existing systems (69%). With the increasing capabilities of mobile devices, data is no longer confined to servers and desktop systems. Guarding the data while facilitating access presents paradoxical challenges for CIOs in higher education.

The budgetary impact of consumerization is less clear. Many respondents mentioned a shrinking demand for computer labs (40%) and realizing financial savings (36%). These optimistic responses were balanced by a concern for increased staffing (45%) and perceived greater cost (17%). These factors might be influenced by the level of existing technology (e.g., an institution that had adequate computer labs prior to the peaking of consumerization might be able to reduce lab sizes) and by the support expectations of the respective campus populations. As mentioned above regarding the overall impact of consumerization, institutions with 3,001-5,000 students identified a reduction in community labs more often (67%) than the overall set of respondents.

The survey respondents acknowledged that consumerization issues were affecting personnel decisions. A majority (68%) indicated that consumerization was requiring more training and development for existing staff. This impact was mentioned 69% to 76% of the time by CIOs from smaller institutions but less often (60%) by very large institutions (over 25,000 students). A significant portion of the respondents (29%) indicated that consumerization was affecting skill requirements for new hires. These implications would have been a matter of greater concern early in the Great Recession, but respondents indicated that their staffing levels are expected to stay the same (52%) or increase (32%). So, the adage "do more with less" appears to be shifting to "do a lot more with a little more."

IDEAS TO CONSIDER

A review of the results confirms the growing impact of consumerization within higher education. There would be some benefit in evaluating these results from a theoretical vantage point by a series of questions like the following:

- What products that did not exist five years ago are impacting the institutional environment? Can we predict what products might have similar impact in the next 3-5 years?

- Higher education has a long history of supporting "bring your own device" (BYOD). What steps can be taken to strengthen that support?

- How will changing etiquette affect demand? For example, will it be socially acceptable to be checking Web sites during meetings and class sessions? Will faculty expect students to identify related Web resources during class discussions?

- How can institutions handle "chicken and egg" dilemmas? For example, at least one laptop manufacturer has begun selling systems equipped with 802.11ac wireless chipsets but many providers of wireless access points do not yet support that technology.

- Consumerization of technology was viewed as a competitive advantage by survey respondents. How can institutions leverage this advantage without getting into an arms race?

- Constituents expect technology that works in the home (e.g., controlling a television from a tablet device) to work in the classroom. How should networks be architected to support this use?

- Will institutions eventually move to the salesman-working-from-home model? In this model, the employee is given a periodic stipend for purchase of technology but the technology remains personal property. What are the support implications of this approach? Will it be possible (or even desirable) to adopt this approach?

ADMINISTRATIVE COMPUTING

While discussions rage over the future of integrated information suites in higher education, colleges and universities continue to make substantial investments in administrative systems which are mostly vendor supplied. They are important to any higher-education institution because they are responsible for managing institutional business processes and transactions as well as student systems to support enrollment, grading and transcripting, and student accounts receivables. Administrative applications continue to account for the largest segment of the IT budget, and every student, faculty, and staff member on campus uses these systems in some way.

Higher education administrative systems must analyze data sources fluidly and in an instant from diverse and remote data sources. With topics such as cloud computing, BYOD, risk assessment, and security facing today's CIOs, we look at what CIOs consider to be important about administrative systems. This year's LBCIO survey asked questions to gauge what CIOs are thinking about and planning for administrative systems.

ENTERPRISE RESOURCE PLANNING (ERP)

ERP systems have been available to institutions for more than 35 years. They were first put in place to help address problems of running separate systems and maintaining separate databases. Some institutions continue to use these types of applications. A vast majority of those who responded to the survey (83%, down slightly from 86% in 2012) use ERP vendor-supplied solutions today for their core administrative applications. Core administrative applications include financials, student systems, human resources, and advancement. According to the survey, only 7% use Best-of-breed solutions (which can be a mix of vendor applications and Home-grown and/or Open-source applications), while 6% use Home-grown solutions.

Of those surveyed, 93% use vendor-supplied financial systems, 88% use vendor-supplied student systems, 93% use vendor-supplied human resource systems, and 87% use vendor-supplied advancement systems. Only 5% use Home-grown financial systems up from 3% in 2012, 11% use Home-grown student systems (up from 8% in 2012), 4% use Home-grown human resource systems (down from 6% in 2012), and 8% use Home-grown advancement systems (up from 4% in 2012). While some of these

numbers are up from last year, overall this represents a modest change. More than 68% indicated their administrative information modules were tightly integrated and another 29% indicated they were loosely integrated. From the survey result we conclude that higher-education institutions still prefer tightly integrated, vendor-supplied systems for their business needs. However, ERP Systems are receiving criticism for not being designed for managing the growing variation and pace of change in our campus requirements. We believe the slight uptick in Home-grown student and financial systems and the increase in loosely integrated modules may be pointing to what we will see in the future.

IN-HOUSE OR OUTSOURCED

Some institutions choose to outsource business processes. The results of the LBCIO survey show that when it comes to administrative systems, very few institutions outsource their administrative applications. Few institutions who responded to the survey indicated that they outsource core administrative systems. Only 1% outsource financial and student systems, 5% outsource advancement systems, and 3% outsource human resource systems. However, the breakout for payroll shows that 10% outsource their payroll systems.

We continue to see more institutions moving certain applications to the cloud. E-mail and learning-management systems seem to be the most popular. Will the future of administrative systems take these core business systems to the cloud as well? From our survey responses over the past four years, it appears that this movement of administrative applications to the cloud is slower than the hype about such movement. In 2013, only 6% indicated that they have either placed or are working on placing financial applications in the cloud which is the same as in 2012.

UPGRADE PLANNING

Administrative systems take a considerable amount of money, time, and effort to implement and maintain. No university can really exist without them. Once these systems are in place, most institutions do not want to go through the process of changing them again for a considerable amount of time. Higher education institutions typically keep their administrative systems longer than other industries. So, what are institutions planning for replacements or major upgrades to their administrative systems?

When will you likely replace or make a major upgrade to the following?

	In Process	Next 2-3 Years	4-6 Years	6+ Years
Financials (GL, AP, AR)	15%	27%	18%	40%
Student Registration, grading, transcripting	17	24	20	39
Financial Aid	15	24	22	40
Human Resources	18	29	17	36
Payroll	16	31	18	35
Advancement	9	34	25	33
Grants Management	14	40	19	27

Most institutions are currently implementing new systems, upgrading current systems, or planning replacements or major upgrades to their financial, student system, human resources, or advancement systems within the next six years.

Over the past 30 years of using IT to support the management of higher-education institutions, we have found that in any given year, about 10% to 15% of institutions either are planning the replacement or upgrade phase or are actually changing systems. This year's data are similar. 15% are currently replacing financial systems, 17% are replacing student systems, 18% are replacing human resources systems, and 9% are replacing advancement systems.

According to the 2013 survey responses, in two to three years 27% of responding institutions will replace their financial systems, 24% will replace their student systems, 29% will replace their human resource systems, and 34% will replace their advancement application. In the four- to six-year window, 18% will replace financial systems, 20% will replace student systems, 17% will replace human resource systems, and 25% will replace advancement systems.

The survey also shows that the majority of respondents continue to discourage shadow systems at their institutions. Almost half of the institutions (49%) indicate that shadow systems are less than a few years ago and 7% indicate they are likely to diminish in importance in the future vs 11% indicating they are growing in number and 3% indicating they are likely to grow in the future.

In summary, ERP solutions are still the most commonly used solution. Although Open-source solutions are often touted at conferences, fewer than 2% of research universities report the use of open source for administrative applications; no other type of institution reported the use of open-source solutions for their core applications. Partnering with other institutions through shared services or collaboration agreements may provide some institutions with a cost-saving strategy. Although many institutions are interested in pursuing such strategies, few are actually doing so at this time. Advances in mobility platforms and advanced integration make real-time informational triggers a reality. For students, these tools have already become a necessity as the mobile world continues to grow.

ACADEMIC COMPUTING

The survey confirmed a number of trends, as well as a few surprises, regarding teaching and learning, including the following:

- Vendor dominance in the learning management or course management system (CMS) market continues to be challenged by open-source applications such as Moodle and Sakai. However, usage of Sakai appears to have peaked in 2011, with usage decreasing over the past two years.

- Almost 60% of institutions have been using their current CMS solution for more than five years and fewer institutions are considering an immediate change in their CMS in comparison with 2011.

- Central IT continued to provide the primary support for the CMS; however, this percentage has decreased over the past two years. Also, the number of respondents outsourcing their CMS has increased slightly from last year.

- The Office of the CIO or the Office of the Provost/ Chief Academic Officer remained the primary reporting authority for instructional design, course design, and online learning management (66%).

- Most respondents continued to outsource student e-mail services (75%). However, there appears to be an increase in the number of institutions outsourcing their faculty and staff e-mail solutions as well (41% as compared to 33% two years ago).

- The use of desktop virtualization continued to grow over the past year increasing from 38% of respondents in 2012 to 51% of respondents in 2013. Sixty-six percent of the respondents used desktop virtualization to replace student community labs.

A majority of institutions (60%) use a vendor-supplied CMS as the standard, while the number of institutions using open-source solutions dropped from 30% to 15%, with 19% utilizing an outsourced solution, and just 3% utilizing a home-grown solution. Blackboard remains the dominant CMS vendor, with 52% of respondents using it as the institutional standard. Moodle was reported as the standard by 27%, and Desire2Learn was third with 13%. Sakai and Angel (now owned by Blackboard) were reported as standards by 5% and 3% of respondents, respectively, and Instructure's Canvas product was used by six institutions (4%). While the use of open-source solutions decreased by almost 50% the number of institutions outsourcing their CMS more than doubled. However, we believe that many CIOs now view Moodle (an open source solution) as vendor supplied due to Blackboard's acquisition of Moodle Rooms.

(Please note: Our sample size was global and large, but the data are only meant to provide useful trend information and strategic and tactical support for CIOs in higher education, not marketing data about the use of CMSs in higher education.)

What CMS are you currently using as your institutional standard?

Blackboard

Year	Value
2010	61%
2011	50
2012	46
2013	52

Moodle

Year	Value
2010	17%
2011	20
2012	26
2013	27

Desire2Learn

Year	Value
2010	5%
2011	8
2012	12
2013	13

Sakai

Year	Value
2010	5%
2011	9
2012	7
2013	5

Angel

Year	Value
2010	7%
2011	7
2012	4
2013	3

Canvas

Year	Value
2010	0%
2011	1
2012	3
2013	4

Other

| Year	Value
2010	6%
2011	7
2012	3
2013	5
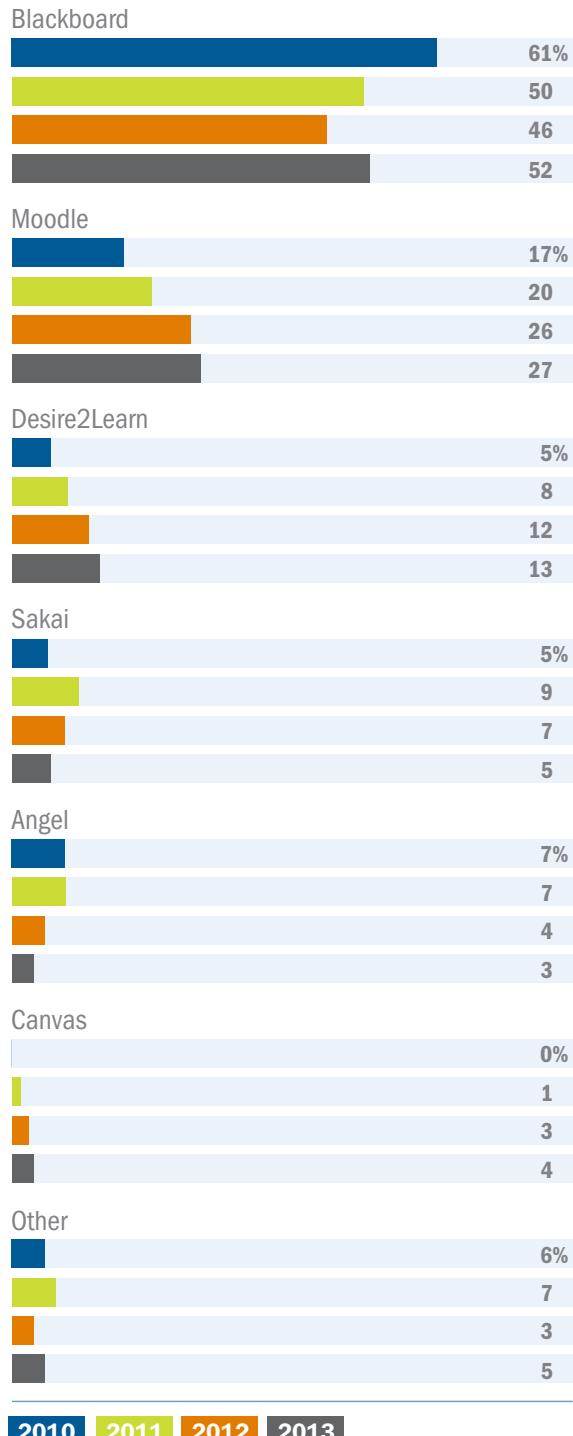
2010 **2011** **2012** **2013**

Just over half of the respondents (59%) have used their current CMS for longer than five years. Three percent of respondents are currently in the process of implementing their CMS, with the remainder (37%) having had their CMS for less than five years.

How long have you used your CMS?

More than 5 years

2011	60%
2012	54
2013	59

2-5 years

2011	29%
2012	28
2013	28

Less than 2 years

2011	7%
2012	13
2013	9
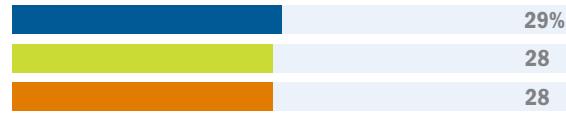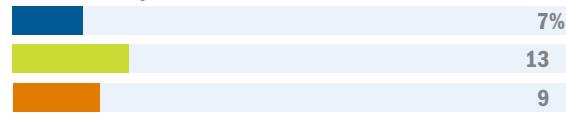
Currently implementing

2011	5%
2012	6
2013	3
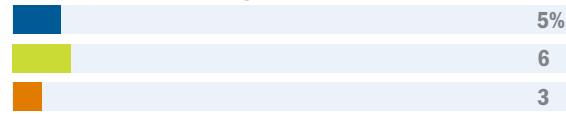
2011 **2012** **2013**

The CMS market space is likely to be dynamic over the next several years, with approximately 40% of the respondents falling into one of two categories: currently considering changing or changing within two to three years. Only 35% of respondents planned to stay with their current CMS for more than 3 years, 26% were not sure when they would replace their CMS, 3% were currently changing their CMS, and 14% were considering a switch in two to three years.

When will you consider replacing your CMS?

More than 3 years

2011	18%
2012	37
2013	35

Don't know

2011	31%
2012	28
2013	26

Currently considering

2011	30%
2012	19
2013	14

2-3 years
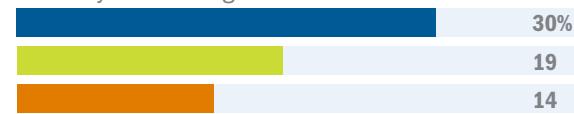
2011	22%
2012	17
2013	26
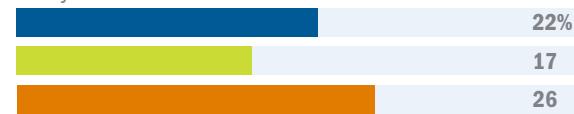
2011 **2012** **2013**

A majority of respondents (60%) assigned responsibility for the CMS and related infrastructure maintenance to the central IT unit; whereas, 17% of the institutions outsourced maintenance and 8% had a separate unit for online education maintaining the CMS. Finally, a small number of institutions had an academic computing group maintaining the CMS.

Outsourcing of CMS services appears to be growing in the role of supporting a CMS. Of the respondents, 17% are outsourcing and 4% are utilizing shared services. Institutions with between 3,001-5,000 and 5,001-10,000 students account for the largest population to outsource at 38% and 22% respectively. Private institutions appear to outsource much more than public institutions with 32% of private institution responses vs. 12% of public institutions that responded to the survey.

Who is responsible for maintaining your CMS and related infrastructure?

Shared Services
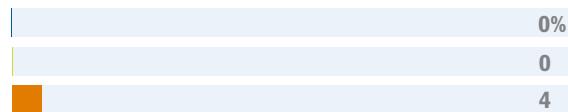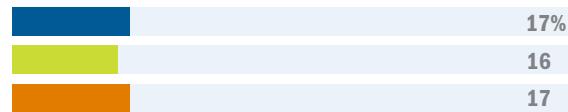
	0%
	0
	4

Central IT

	67%
	63
	60

Outsourced

	17%
	16
	17

Separate unit for online education

	8%
	10
	8

Academic computing

	5%
	6
	7

Other (please specify)

	3%
	6
	4
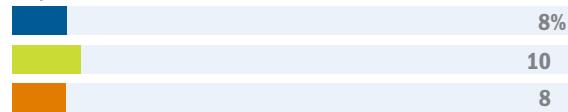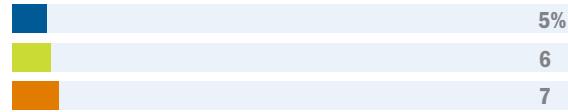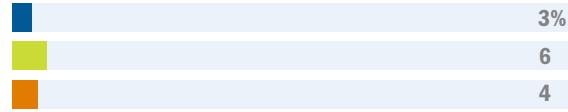
2011 **2012** **2013**

Reporting functions varied for instructional design, course design, and management of online learning. In two-thirds of the cases, these functions report to the CIO (34%) or the provost/chief academic officer (32%). In 17% of respondents, these functions report to a separate unit for online education, and in 10% of the cases, they report to a dean-level executive.

Where does instructional design, course design, and the management for online learning report?

CIO

	33%
	35
	34

Provost or Chief Academic Officer

	34%
	33
	32

Separate unit for on-line education

	18%
	17
	17

Deal level

	11%
	10
	10

Other

|	
	3%
	4
	7
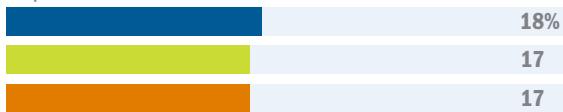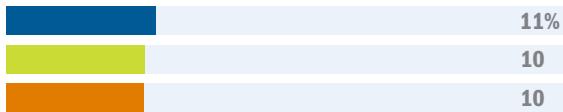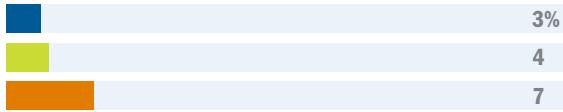
2011 **2012** **2013**

For the second year, more institutions are outsourcing student e-mail than in previous years. In 2012, 76% of respondents were outsourcing student e-mail. In 2013, 80% have reported that they now outsource. While Google maintains the lion's share of student e-mail at 41% and saw a 4% increase from the previous year's 37%, Microsoft has picked up 3% and now has a 37% share.

Once again on average, 48% of smaller institutions (up to 10,000 students) were much more likely to outsource to Google than were large institutions (more than 10,000 students). Last year, 24% of smaller institutions outsourced student e-mail to Google and this year it doubled to 48%. Last year 7% of smaller institutions outsourced to Microsoft and this year 28%

did; an increase of 400% over the previous year. Larger institutions preferred to outsource student e-mail to Microsoft instead of Google. In those institutions Microsoft has 48% of the outsourced student e-mail, which is up by 436% over last year's 11%. Google's footprint in large institutions this year is 33% which is a 367% increase over last year's 11% share.

### Do you outsource e-mail for students, and if so, to whom?

Google

2011	34%
2012	39
2013	41

Microsoft

2011	24%
2012	34
2013	37

Don't outsource

2011	35%
2012	24
2013	20

Other

2011	8%
2012	3
2013	2

2011 **2012** **2013**
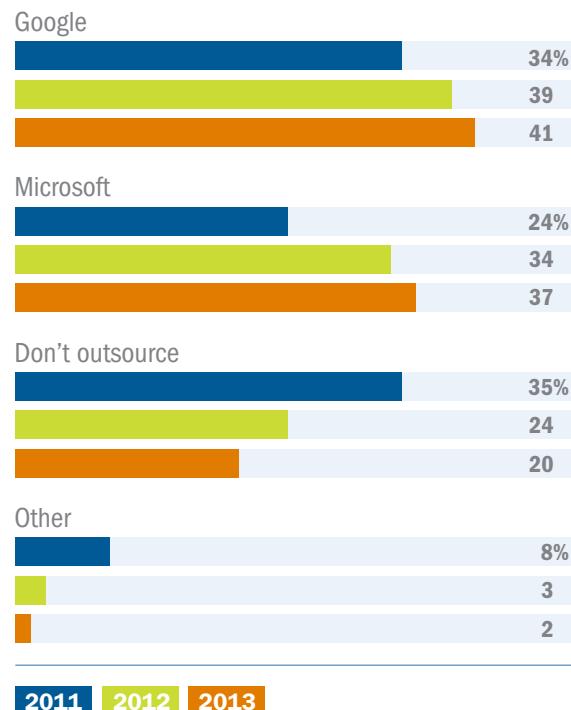
While most institutions are still reluctant to outsource e-mail for faculty and staff, 41% now outsource. This is a significant increase from last year's 34% of respondents. Still, a hefty 59% still do not outsource faculty & staff e-mail, but clearly this resistance is slowly, but surely, being eroded. While Google maintained its lead at 19% of faculty and staff e-mail, Microsoft has a picked up a respectable 14% share. This is a 4% increase over last year, while Google showed no growth.

While 55% of smaller institutions (up to 10,000 students) and 64% of larger institutions do not outsource faculty and staff e-mail, 28% of smaller institutions seemed much more comfortable outsourcing to Google

(their use of Microsoft is 11%) and 20% of larger institutions seemed slightly more comfortable with outsourcing to Microsoft (their use of Google is 18%).

Do you outsource e-mail for faculty and staff, and if so, to whom?

Google

2011	12%
2012	19
2013	19

Microsoft

2011	4%
2012	10
2013	15

Don't outsource

2011	77%
2012	68
2013	59

Other

|	
2011	8%
2012	3
2013	2

2011 **2012** **2013**
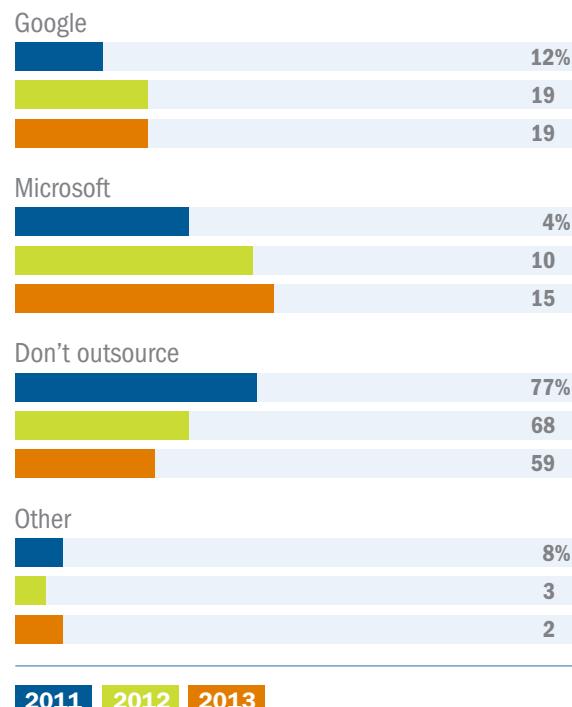
CIOs are reporting a significant increase in the adoption of desktop virtualization (VDI) solutions. Last year just over 38% of the institutions had deployed a VDI solution for their computer labs, this year 51% have done it. In 2011 it was 32%. So in just two years there has been a 19% increase in the number of institutions who have deployed VDI solutions. This is pretty significant when you take into account that last year 37% said they were planning to implement VDI and 9% of them actually did.

This year 28% say they are planning a VDI implementation. We could reasonably predict that by next year there might be an increase of between 7% to 9%. If that happens it would bring the number of VDI deployed labs up to almost 60%. It will be interesting to see what cost savings or productivity gains this trend will realize. Twenty-three percent of institutions had no plans to deploy a VDI solution, which reflects a slight increase

over the 22% in 2012 that reported that they had neither planned nor deployed a VDI solution. Still, 71% of smaller institutions with up to 10,000 or fewer students, reported they have or plan to implement VDI, compared with 85% of the very large institutions (25,000 or more students). The larger institutions have maintained the same rate of adoption as they had last year (85%).

Are you currently utilizing desktop virtualization?

2013
Yes	51%
No	22
In the Planning Stages	28

2012
Yes	38%
No	25
In the Planning Stages	37

2011
Yes	32%
No	31
In the Planning Stages	37

Yes **No** **In the Planning Stages**
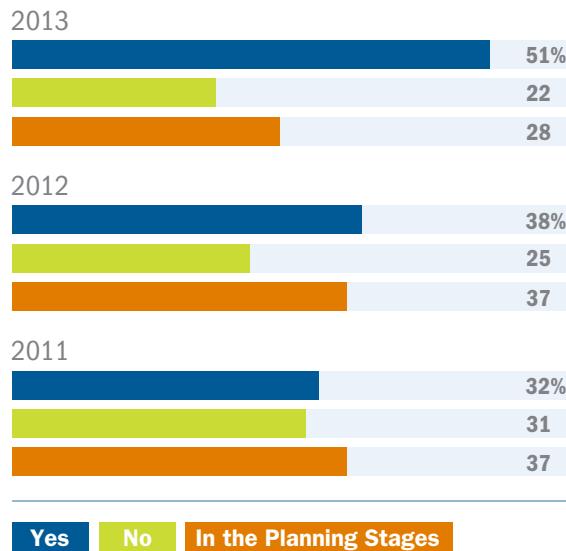
The number of institutions citing the replacement of student labs as the reason for their VDI implementation planning is up 66% from 25% in 2012. Fifty-eight percent cited using it as a thin client for faculty/staff and students as the primary reason. This is up from 23% in 2012. In terms of the goal for VDI, approximately 47% of the respondents indicated support for BYOD strategies, which is up from the 17% who cited BYOD as their primary reason. 32% cited to support distance education as the reason, up from 13% in 2012 and 26% of respondents cited security as the goal for VDI, which is up from 11 percent last year. The trend seems to indicate that VDI is here to stay, because it is seen as a multi-faceted tool that can increase productivity for administrative and academic departments as well as provide efficiencies and security for the lab environment. VMWare seems to be the VDI solution of choice with a whopping share of 72%—a 22% increase over last year's share of 49% of the respondents. Citrix was listed by 40%, an increase of 11% over last year's 29%, and although Microsoft doubled its share with 18% over last year's 9%, it is still a distant third

in this race. Other solutions have the remaining 3% share of respondents' chosen VDI tools.

Which best describes your plans for desktop virtualization?

Used to replace student labs
2012	25%
2013	66

Used as a thin client solution for staff/faculty
2012	23%
2013	58

Used mostly by students
2012	11%
2013	32

Used as a "bring your own device solution
2012	17%
2013	47

Used to support distance-education students
2012	13%
2013	32

Used as a security strategy
2012	11%
2013	26

2012 **2013**
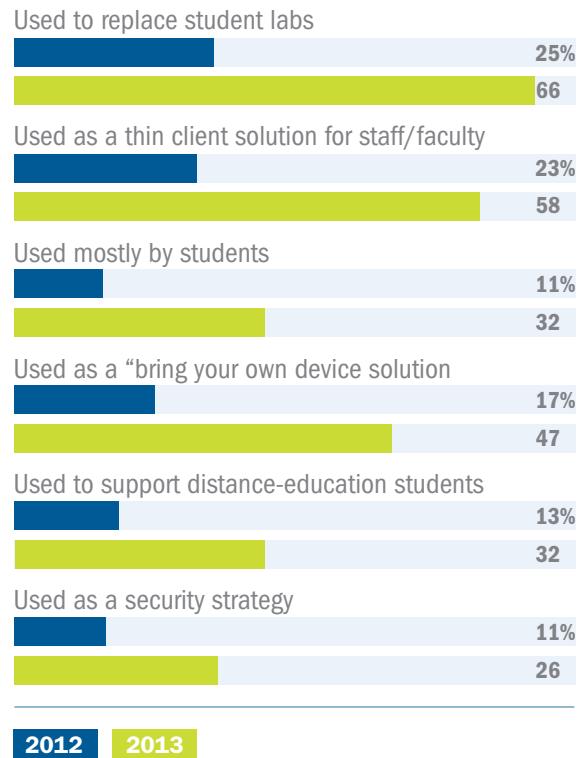
What are your plans for desktop installations and community labs?

So what is the future of desktop installations and community labs according to our respondents? As expected, these two areas are seeing slower growth. Last year 50% of the institutions expect desktop installations to stay about the same or decrease. It remains the same for this year. This year 46% expect desktop installations to grow. There is no significant increase but a 1% decrease in respondents saying that they expect growth in desktop installations. Community labs are much more likely to shrink in the coming years. Only 15% of the institutions expect community labs to grow, with 85% seeing a decrease or no growth. A sizeable number of institutions (36%) expect student use of WiFi and local area network ports to augment the use of community labs, thus curtailing any growth.

Institutions would like to decrease the number of community labs being supported. Twenty percent are decreasing the number of their community labs, while 15% are increasing. We can see a shift in the equilibrium of last year's 15% decrease and 15% increase. It seems that there are now 5% more respondents that are decreasing the number of community labs. We expect that VDI and BYOD support strategies will increase and this will have an effect on lessening the number of labs being built in the near future.

INFRASTRUCTURE AND NETWORKING

INFRASTRUCTURE IN THE PERFECT STORM

We hear and read a lot about topics like "cloud storage," "BYOD," and "security breach" in higher education. Do these concepts have any particular implications for infrastructure and networking on university campuses? The LBCIO survey focused on three primary areas that might be affected by current technology trends:

- Security
- Disaster recovery and business continuity
- Networking infrastructure

This section of the survey was relatively brief, but the results do provide some insights on how higher education institutions are responding to the rapidly changing technology landscape.

SECURITY

Computer and network security breaches have garnered significant attention in the popular press. Network World recently posted an article "The Word Data Breaches So Far" in April, 2013 (http://www.networkworld.com/slideshow/94497/the-worst-data-breaches-so-far.html). While the impact of breaches touches many people across all industries, higher education institutions are vulnerable because we promote an open environment to support teaching/learning, research and community access and support while trying to support sensitive and highly personal information and data.

Organizations that suffered breaches ranged from professional social-networking sites to dating sites, to ecommerce sites. One of the compromised environments belonged to a firm that provides two-factor secure authentication. If major corporations, healthcare organizations and energy companies are suffering these kinds of breaches, what must institutions of higher education do to protect themselves, and how are they planning for the future?

Effective leadership is required to implement an appropriate security plan. More than half (61%) of the institutions surveyed indicated that they had a specific person designated as chief security officer (CSO). This percentage has increased steadily during the past few years up from 55% in 2010. More than 95% of the CSOs report through the IT organization; it would be reasonable to assume that (including those organizations without a designated CSO) that the security function is a component of one or more IT positions on most campuses.

Security plans often include protection strategies, educational efforts, and measurement techniques. Our survey results show that 55% of institutions have a formal security plan and another 23% are in the process of developing such a plan. These numbers show an increase from 2010 when 43% reported having a formal security plan and another 16% working on a plan. The security plans are formulated against a backdrop of a security audit: identifying security resources that are already in place. More than three-fourths (77%) of the institutions surveyed have completed at least one security audit. One interesting change in the survey data is that the number of institutions that conduct a security audit at least annually raised from 37% in 2012 to 43% in 2013. Security spending increased in 71% of the institutions. Only 2% reported a decrease in security spending.

Multifactor authentication provides the institution with a greater likelihood that a person/entity seeking access is who they say they are. While only 20% of institutions have implemented a multifactor authentication solution in 2013, this is up from 11% in 2011 and the percentage of institutions currently considering such a solution has risen to 34% in 2013 up from 30% in 2012.

DISASTER RECOVERY AND BUSINESS CONTINUITY

In a real sense, security planning is an exercise in providing insurance against undesirable outcomes. Disaster recovery and business continuity reflect that same philosophical basis: determining an appropriate amount of effort and expense to be applied against risks that are somewhat difficult to quantify. Recent natural

disasters such as hurricanes Sandy and Isaac have prompted IT professionals to consider the impact of severe disruptions in computing and networking.

The percentage of institutions with a formal business continuity plan (78%) is higher than the percentages that have a formal security plan (55%). This difference might be due to the relative familiarity with the risks (we all know what it is like to encounter bad weather or a fire), or it could be that higher-education institutions have a longer history of protecting physical assets than they have with protecting electronic assets.

One of the ironies of planning within higher education is the tendency to avoid rehearsing the plan. More than one-third of the respondents in 2012 indicated that their business continuity plan had never been tested. A participant at a recent conference observed that IT professionals spend a lot of time planning for the "100-year flood" when they should be more concerned about the routine thunderstorm. Those who don't have any plan may believe that plans for the extreme disaster are so daunting that IT professionals cannot muster the energy to build the plan and test it. Others are convinced that a modest plan that is tested might be more effective than an untested elaborate plan. In practice, it may be that institutions are taking this latter approach: 58% have a secondary data center that provides some level of recovery potential in the event of a catastrophe affecting the primary data center.

NETWORKING

While coping with security concerns and potential disasters, institutions still need to provide a robust network for their constituents. Increasingly, this means ubiquitous wireless access and high-speed wired access.

Wired networking remains an important service on many campuses: 48% of the respondents provide some level of gigabit service to the desktop. Of those respondents, 36% and 21% indicated that gigabit service was provided to all faculty/staff and students, respectively. Why would wired connectivity remain important in a wireless world? LBCIO board members have offered two reasons from their own institutions: Faculty researchers often need to transfer large data sets that would be cumbersome on a wireless network. For students, life in the residence halls includes the use of video game consoles that function

best (or perhaps only) in a wired environment. The proliferation of wireless devices can saturate a particular spectrum to the point where a wired connection is preferred for some activities.

MOOCS AND BIG DATA

A hot topic over the past year, MOOCs (massively open online classes) is starting to turn into deeper interest and action from the majority of our respondents. About 2% are using it as a form of remediation or preparatory learning and another 2% are using it for undergraduate courses. Four percent are using MOOC content within their existing courses and 10% are currently developing MOOCs. More than half (56%) are currently exploring the use of MOOCs and 38% are not considering MOOCs at this time. The type of institution does seem to matter. While 69% of research universities are exploring the value use and role of MOOCs, only 35% of 2-year institutions are doing so.

Our Current Institutional Involvement with MOOCs (check all that apply)

Not considering at this time
38%

Working with other institutions to develop MOOCs
3

Developing courses to be delivered as MOOCs
10

Are using MOOCs as a form of content for some
4

Are using MOOCs for some current undergraduate
2

Are using MOOCs for some remedial course
2

Are exploring the value, use and role of MOOCs
56
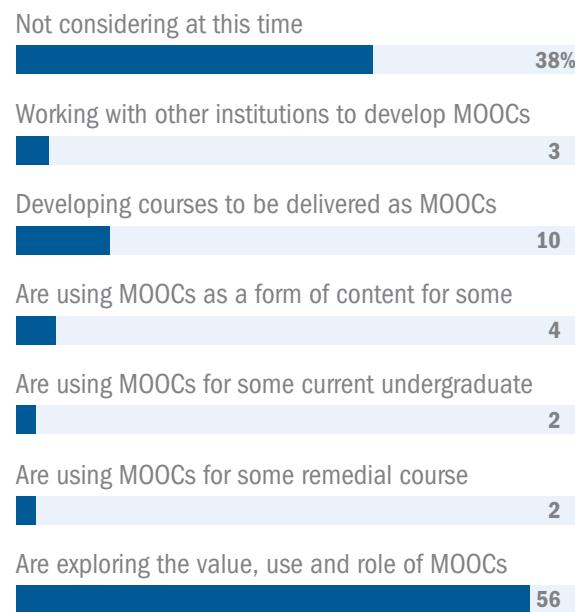
Top MOOC platforms or providers currently being used include Coursera (70%), Kahn Academy (37%), Udacity (27%) and EdX (25%). While most of our respondents don't currently offer a MOOC (85%), of those who do, one-quarter of the institutions reported a low completion rate of between 0 and 24% and the remaining three quarters do not yet know the completion rate. While many institutions are interested and exploring the value and role of MOOCs, there is no track record to follow at this time.

Which of the following are you currently using or considering (Check all that apply)

Coursera
70%

Kahn Academy
37

Udacity
27

EdX
25

Other
25

2U
3

Edemy
1
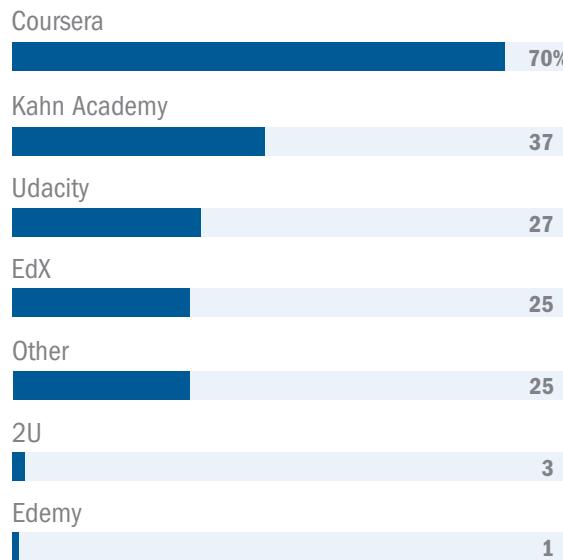
Institutions consider MOOCS for a variety of reasons, with the ability to have content to supplement current courses at the top of the list, to enhance the institutional brand and to offer remedial courses for under-prepared students as the top three reasons. Respondents also indicated that garnering publicity also was important in their considerations and avoiding loss of revenue. While budget issues usually rank at the top of an institution's concern about a new activity, responding institutions rated new revenue last in the reasons for adopting MOOCs.

Which of the following best describes your institution's interest in or concerns about MOOCs?

Content to supplement current courses
54%

Reputation
45

Remedial courses for under-prepared students
37

Publicity
33

Potential loss of revenue
30

Being an early adopter
20

Increased revenue
19

Other
8
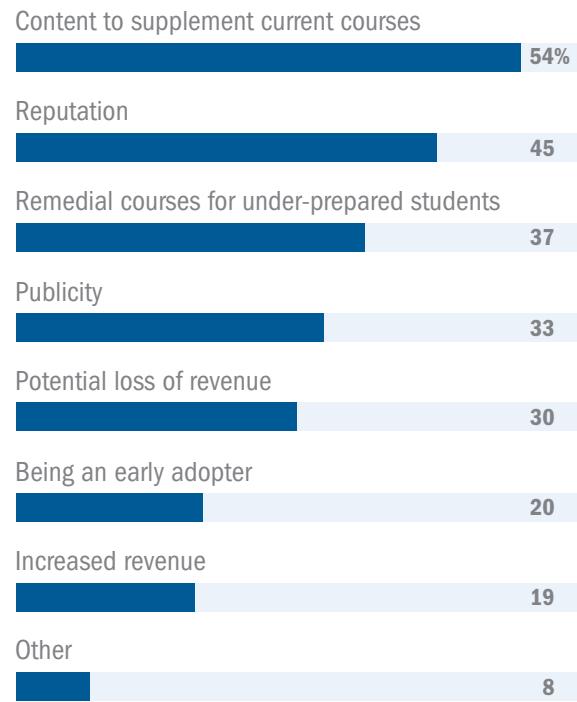
Finally, only 14% of our institutions indicated that MOOCs were a critical component to a long-term instructional strategy. About half (48%) said MOOCs were not and the remainder (37%) were unsure if MOOCs were important to a long-term instructional strategy. From these responses, we can surmise three things at the moment with regard to MOOCs:

a) Adoption is still early

b) Adoption is advancing quickly

c) MOOCs are strategically significant for only a small percentage of the institutions

Another hot topic, big data, is also alive and well at our responding institutions. While 53% do not yet have a big data strategy, 17% do and 30% are working on a strategy now. To be expected, institutions responded that administrative decision-making ranked first as a big data use today (64%), with research (54%) and teaching and learning analytics close behind (45%). About one third of

our respondents are using big data solutions for marketing analytics (34%) and only 19% were using a big data solution related to a digital repository of some kind. Of those using a digital repository of some kind, two-thirds are using a vendor solution and one-third are using open source.

## Is your institution leveraging Big Data for: (check all that apply)?

Administrative decision making
64%

Research
54

Teaching and learning analytics
45

Marketing analytics
34

Digital content repository
19
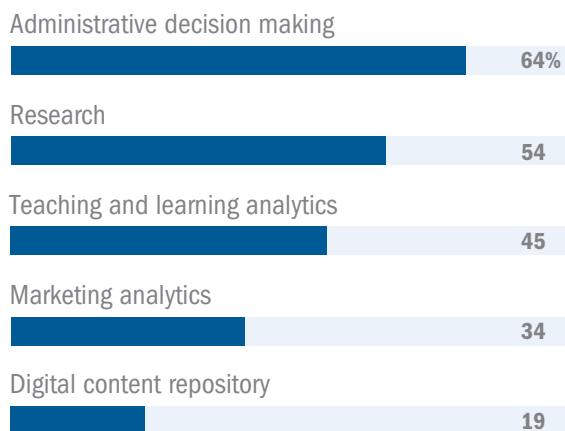
Are you utilizing a digital repository solution (DR)

Yes	No	Considering
40%	35%	25%
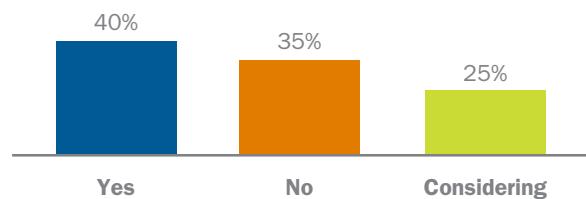
While actual big data use seems to be reasonably established in some form or another, the tremendous growth in data is creating numerous issues for higher education institutions. Unsurprisingly, the need to accommodate that growth was noted by most institutions (82%). Compared to this core infrastructure impact, all other impacts, while significant in responses by themselves, each of the other impacts had less than half the respondents indicating a potential impact. These potential impacts included: security, data formats, providing support and bandwidth, collaborations, campus culture and identity management.

Big Data is impacting: (check all that apply)

Data storage
82%

Security concerns
43

Data format
40

Support
37

Bandwidth
35

Internal/external collaborations
34

Identity management
27

Campus culture
27
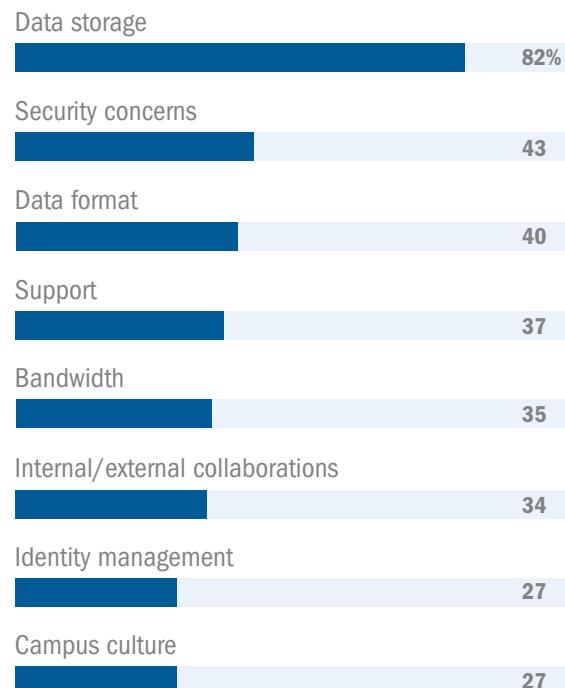
Interpreting these responses indicates that higher education is further along in adoption of big data solutions of some kind. Our respondents felt that the impacts were greatest on general infrastructure (need for storage) and while other potential impacts do loom, such as the impact of big data on security, the level of concern is less.

CLOUD COMPUTING AND NEW AND EMERGING TECHNOLOGIES

Higher-education institutions that are using cloud computing reported different types of activities. Most institutions reported using cloud computing for a mix of academic, administrative, and community services with no significant difference based on Carnegie classification, which is consistent with reporting from 2012. The one area that showed decrease in the

use of the cloud is in the area of management needs (administrative computing). Four-year institutions reported relatively higher usage in the management area of 27% and two-year institution reported no use for community service or outreach.

Cloud Computing Usage by Classification

Research University

Mostly academic	23%
Mostly management	13
Mix	61
Not sure	4

Doctoral Granting

Mostly academic	19%
Mostly management	15
Mix	60
Not sure	6

4-Year Institution with Master's

Mostly academic	16%
Mostly management	8
Mix	64
Not sure	12

4-Year Institution

Mostly academic	15%
Mostly management	27
Mix	54
Not sure	4

2-Year Institution

Mostly academic	26%
Mostly management	17
Mix	57
Not sure	0

■ Mostly academic (teaching and learning)

■ Mostly management needs

■ Mix of academic, administrative and community service

■ Not sure

CLOUD COMPUTING INFLUENCING FACTORS

Institutions indicated that there are many factors influencing their usage of cloud computing. Most institutions reported saving money as the top influencer, especially among 2-year and 4-year institutions (83% & 85% respectively). Doctoral granting institutions indicated they were more interested in bringing services online in a timely manner. Concerns for security, privacy concerns, ownership protection, and access to data are also very important to most CIOs and are negative influencers.

Which of the Following are cloud computing influencers (check all that apply)?

Saving money through the use of cloud computing	78%
Concerns about security	73%
Protection of sensitive data/information	72%
Access to data/information in the cloud	65%
Concerns about privacy	65%
Ownership of data	65%
Ability to bring new activities on-line quickly	63%
Other	5%

CLOUD COMPUTING IMPACT ON BUDGET

Most institutions expect a moderately positive impact on the budget when using cloud computing; however, the overall position of very positive and moderately positive impact on budget fell from 61% in 2012 to 51% in 2013.

To what degree do you expect cloud computing to affect your budget in the future?

Very negative (will cost more than we can...)

2%

2

Somewhat negative

6%

6

Neutral on budget

31%

40

Moderately positive

51%

41

Very positive (save money)

10%

11
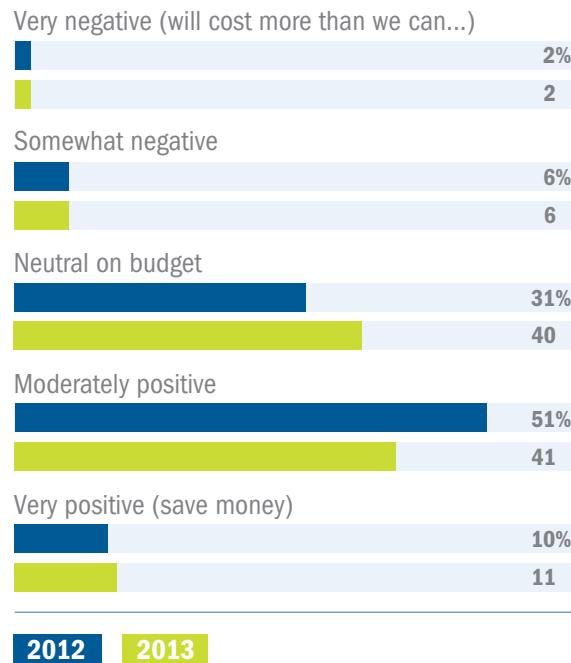
2012 **2013**

APPLICATIONS IN THE CLOUD

Most institutions have moved some applications into the cloud. Mail is the primary application moved to the cloud with 81% indicating that they have either place mail into the cloud or are in the process of placing it into the cloud. Few institutions seem willing/ready to move serious administrative applications such as financials or student information into the cloud as indicated by the figure below.

Which of the following areas are you either currently placing in the cloud or are in the process of placing in the cloud (check all that apply)

e-Mail	81%
Social networking	44
Portal	15
Data Center	13
Desktop tools (i.e. MS Office)	22
Library applications	34
Financial applications	5
Course/Learning Management (LMC or CMS)	44
Student applications (registration, enrollment...)	9
CRM	23
Data Storage	36
Business continuity/disaster recovery	26
Other (please specify)	8

The use of cloud computing varies by type of institution and by size. The following figures show those differences:

Which of the following areas are you either currently placing in the cloud or are in the process of placing in the cloud (check all that apply)

CLASSIFICATION OF INSTITUTION	2-Year Institution	4-Year Institution	4-Year Institution with Masters	Doctoral Granting	Research University
e-Mail	73%	77%	79%	78%	91%
Social networking	14	35	50	43	45
Portal	14	4	17	18	16
Data center	9	0	14	12	19
Desktop tools (i.e. MS Office)	23	12	23	20	28
Library applications	46	35	31	41	28
Alumni applications	18	35	12	29	19
Financial applications	5	0	2	10	7
Course/Learning Management (LMC or CMS)	5	4	12	12	9
Student applications (enrollment, management, registration)	36	35	50	49	43
CRM	14	8	25	29	28
Data Storage	23	19	42	45	35
Business continuity/disaster recovery	18	27	31	27	24
Other (please specify)	14	12	8	4	9

SIZE OF INSTITUTION	3,000 students or less	3,001 – 5,000 students	5,001 – 10,000 students	More than 10,000 but less than 25,000	More than 25,000 students
e-Mail	81%	86%	75%	83%	81%
Social networking	44	55	36	56	26
Portal	11	24	25	13	7
Data center	3	17	8	13	21
Desktop tools (i.e. MS Office)	19	21	19	23	26
Library applications	33	28	50	38	21
Alumni applications	28	14	31	22	12
Financial applications	0	14	11	5	10
Course/Learning Management (LMC or CMS)	6	62	19	3	10
Student applications (enrollment, management, registration)	33	0	42	39	52
CRM	19	14	33	25	21
Data Storage	33	45	28	36	38
Business continuity/disaster recovery	22	31	28	27	24
Other (please specify)	11	3	14	6	7

STANDARDS-SETTING

College and university technology communities have changing standards. All institutions of any size or type have standards for notebooks, desktop computers, and servers. Nonprofit institutions led with 100% having standards in all three categories, followed closely by public universities (85%) and private colleges (95%). Standards adoption is not common with smartphones and tablet computers in public (48%) or private universities (43%), but was significantly more common at two-year institutions (70%). As personal ownership continues to control the mobile-device market, universities will have a difficult time enforcing standards. A more likely scenario is that the market will determine the standard that universities will be required to support, as seen in the survey responses for smartphones and tablets.

For which of the following does central IT provide selection criterion and/or standards? (Check all that apply)

Servers
- 87%
- 90

Desktop computers
- 98%
- 99

Notebooks
- 82%
- 87

Tablets
- 48%
- 55

Smart phones
- 41%
- 43

2012 **2013**
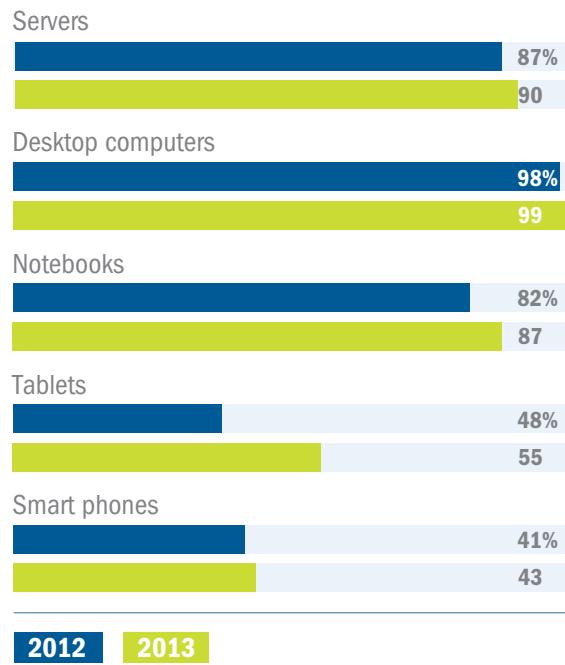
WHAT ARE CIOS DEFINING AS EMERGING TECHNOLOGIES?

Consistent but even more pronounced in the emerging technologies is the impact of Mobile Devices/Bring Your Own Device. With 52% of respondents indicating this is either the first, second, or third most considered with respect to emerging technologies, it was clearly the top choice. Virtual desktops fell from second in the 2012 survey to seventh. Replaced with more traditional networking/infrastructure and Admin apps as, perhaps institutions are investing in other enhancements to support the BYOD movement as students, faculty, and staff continue purchasing their own mobile devices. It is interesting to note that 3D printing is listed as number 1 by more than 2% of the institutions.

List the top 3 new and emerging technologies you are considering:

Mobile Devices/BYOD	52%
Networking/Infrastructure	39
Cloud Computing	32
Teaching/Learning tools and apps	29
Data Management	24
Virtual Desktops/VDI	23
Admin apps	16
Security Identity Access	13
MOOCs	12
Big Data	9
Video apps	8
Collaboration tools	6
3-D Printing	4
Social Networking	3
ERP	2
ebooks/digital content	1
Open source	1

SUMMARY AND METHODOLOGY

Although budgets are still tight, there seems to be more optimism about both budgets and the planning of IT use for the future. CIOs continue to plan for changes in IT to ensure that the institutions' information needs are securely met. Some positive results indicate the following:

1. VDI shows great promise in providing expanded services while cutting back on institutionally owned labs.

2. The use of shared services is expanding and will be worth watching in the future.

3. IT governance is not a passing fad, and more institutions rely upon their governance model when making major IT decisions.

4. The use of cloud and open-source computing continues to grow on campus, but growth is slower in the administrative applications area.

5. The need for more bandwidth continues, and gigabit-to-the-desktop service is no longer just for the large research institutions.

The 2013 survey was sent to over 1,000 CIOs globally, and the response rate was more than 23%. The survey was conducted the last week of April 2013 and completed the second week of May 2013. 65% of respondents were from public institutions, while 34% were from private institutions and slightly more than 1% were from proprietary institutions. Research universities comprised 29% of respondents, four-year institutions with master's degree programs 25%, doctoral-granting institutions 23%, two-year institutions 11%, and four-year institutions with no graduate programs 13%. The proportion of respondents by institution size, based on full-time enrollment, is as follows:

Fewer than 3,000 students	18%
3,000 to 4,999 students	14
5,000 to 9,999 students	17
10,000 to 24,999 students	31
More than 25,000 students	21

If you would like more information about the survey or The Leadership Board for CIOs in Higher Education, or would like to become a member of LBCIO, please contact—

Dr. Michael Zastrocky, Executive Director
1271 Cedar Street Broomfield, CO 80020
+1 720 242 5150
Mobile +1 303 807 9408
mzastrocky@lbcio.org

Or visit the LBCIO Web site at: **www.lbcio.org**

CURRENT MEMBERS OF THE LEADERSHIP BOARD FOR CIOS IN HIGHER EDUCATION

Leadership Board for CIO's

Dr. Michael Zastrocky,
Executive Director

1271 Cedar Street Broomfield, CO 80020
+1 720 242 5150
Mobile +1 303 807 9408
mzastrocky@lbcio.org