

The Higher Education CIO

Portrait of Today, Landscape of Tomorrow

Research Report

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Foreword

The CIO role in higher education continues to inspire, intimidate, and perplex us. We are filled with questions about the role and its future:

- Are CIOs strategic business leaders, service managers, technologists, or something else?
- Is the CIO role being downgraded in the organization hierarchy?
- Is the CIO role too close to the institution's business functions and too far removed from its academic missions? Is it too far from both?
- What are the boundaries of the role? Which functions report to the information technology leader?
- What is in the secret sauce that makes a CIO? Is it a PhD? Higher education experience? An inside track at one's own institution? Unsurpassed technical expertise? What is the one skill needed beyond all others?
- If the role is as difficult as it seems, why would anyone wish to be a CIO?
- Are we heading toward a glut of CIOs or a deficit? Will enough talented successors be available to fill the seats of a generation of retiring baby boomers?

The 2011 EDUCAUSE Center for Applied Research (ECAR) study of the higher education information technology (IT) workforce and leadership spotlights the CIO role, past, present, and emergent. It points the way to the future of the CIO role in higher education by answering the questions this Foreword poses, and by suggesting the new questions we really should be asking.

This study also points the way to the future of ECAR research. Never before has an ECAR study combined so many sources of data. The study examines and integrates findings from the 2010 ECAR survey of IT staff and leadership, five years of data from the EDUCAUSE Core Data Service, five years of data from the EDUCAUSE Current Issues Survey, and 24 interviews with sitting CIOs from research universities, liberal

arts colleges, and community colleges, among others. This research is unprecedented in its thorough and thoughtful examination of the CIO role in higher education. The resulting study also represents a new path for ECAR in that it focuses on specific, timely questions and provides contextual and actionable information. I welcome your feedback on this new direction for this aspect of ECAR's emerging agenda.

I hope these findings will serve as guideposts for current and aspiring CIOs, as well as for higher education leaders. Current CIOs will find useful information about how IT is organized, viewed, and governed at their peer institutions. They will also learn, from their peers and aspiring successors, how they can best prepare the next generation of CIOs. CIO hopefuls will find a wealth of advice about preparing for the role they seek, a closer look at the role itself, and how the role differs from institution to institution. And, perhaps, they will see debunked some of their long-held beliefs about the role and its requirements. Non-IT leaders of higher education—the people to whom CIOs report and with whom CIOs collaborate—will appreciate seeing the role as it is viewed by many who occupy it. They will learn how variable the role is and, most importantly, the extent to which their institutions' management practices, organizational choices, and culture influence the quality of their IT department. All readers, regardless of role, will find the quoted wisdom of the sitting CIOs we interviewed enlightening and actionable.

Many individuals have contributed time and talent to this report. I would like to thank the 3,400 IT leaders and professionals from more than 1,000 colleges and universities who took the time to provide the data upon which this study is based. Without their insights and honesty, ECAR would be unable to conduct its research. In particular, I am grateful for the generosity of the five CIOs and IT leaders who agreed to be interviewed and then quoted or featured in a spotlight video.¹ Their words leavened and clarified the quantitative results.

The team that produced this research is talented and diverse. Mark Sheehan, ECAR Senior Research Analyst, designed and oversaw the data collection for the IT workforce survey in 2010 and kept the study alive during several months of staffing transitions. Catherine Yang, Senior Director at EDUCAUSE, and Bret Ingerman, Vice President of Computing and Information Services at Vassar College, led the EDUCAUSE Current Issues Committee, and Catherine created the Current Issues chart featured in this report and supplied the data. Becky Granger, Director of Information Technology and Member Services at EDUCAUSE, has ably managed the EDUCAUSE Core Data Service since its inception, and she provided the data extracts used in this study. Pam Arroway, EDUCAUSE Senior Statistician, created an initial draft of the report, led the analysis team, and kept the quality of our data analysis consistently rigorous. Judy Pirani, ECAR Fellow, conducted the IT leadership interviews that supplied so much of our qualitative data. Toby Sitko, Managing Director of Data, Research, and Analytics at EDUCAUSE, provided project management and guidance, and Gregory Dobbin, EDUCAUSE Editor and Project Manager, oversaw editorial, graphical, and layout support.

Gerry Bayne, EDUCAUSE Multimedia Producer, took the initiative to interview CIOs at EDUCAUSE events in summer 2011. I encourage you to view the resulting 4-minute video of their supplemental insights, featured on the ECAR research hub for this study, at <http://www.educause.edu/library/ERS1102>. The video adds depth and context to the main findings.

Carrie Regenstein, Associate Vice Provost for Computing Services at Carnegie Mellon University, has been our trusted advisor and compass, generously applying her extensive experience in IT leadership in higher education to ensure that this study addresses the questions that matter most. She engaged the Common Solutions Group members, who provided very useful initial guidance in identifying those questions. Finally and especially, I would like to thank Jerry Grochow, retired Vice President of Information Services and Technology at MIT, for weaving numerous threads into a highly readable and useful report. He deftly merged parallel efforts and multiple sources of data into a final, unified set of findings.

The EDUCAUSE commitment to advancing the profession and practice of IT is reflected in its support of CIOs. It is our hope that this study will make some modest contribution to our profession, and to yours.

—Susan Grajek

EDUCAUSE Vice President for Data, Research, and Analytics
Boulder, Colorado

Executive Summary

Today's CIOs are doing more strategic planning, more negotiating, and more business planning than ever before. While some in the profession are working to define what the new CIO can and should be (a strategist? a business developer? a high-tech plumber? a mix of all three?), demographics tell us to expect a high rate of turnover in CIO positions as today's "boomer" CIOs reach retirement age. Concerns about CIO responsibilities, influence, and transition to the next generation are being raised at venues ranging from EDUCAUSE conferences to college and university boardrooms. This report, based on data collected in several EDUCAUSE surveys, explores these issues and how the next generation of IT leaders can act to get ahead of the curve.

The EDUCAUSE Center for Applied Research (ECAR) conducted a survey and follow-up interviews in 2011 with questions about IT workforce and leadership, expanding on similar ECAR studies published in 2004 and 2008.² The survey for the 2011 ECAR study was distributed to almost 30,000 EDUCAUSE members who held positions of CIO, IT senior professional, IT support professional, senior library professional, and library professional. Responses were received from 3,400 people from more than 1,000 institutions. Reported results are based on responses from 368 senior IT leaders (whom we refer to in this report as CIOs), 545 CIO "aspirants," and 2,487 other IT staff. Twenty-four follow-up phone interviews were also conducted

with CIO respondents. (Throughout this report, quotations from these interviews are sometimes attributed and sometimes not attributed.)

This report also draws on the 2005–2009 EDUCAUSE Core Data Service (CDS) and the 2006–2011 EDUCAUSE Current Issues Surveys.³ Since 2002, the CDS has tracked data on higher education central IT organizations and IT leaders, with more than 900 institutions completing the survey each year. Results from the most recent CDS were not available before publication of this report. The EDUCAUSE Current Issues Survey has been measuring member opinions about important IT issues for the past 12 years. Other sources, including EDUCAUSE presentations and ECAR research, are also cited. Tables and figures in this report that are not attributed specifically to the EDUCAUSE CDS or the EDUCAUSE Current Issues Survey are the results of analysis of the 2010 IT Workforce and Leadership in Higher Education survey and related follow-up interviews. Note that the ECAR leadership and workforce reports published in 2004, 2008, and 2011 are based on survey responses that were collected in 2003, 2007, and 2010, respectively.

This report examines the following questions:

- What is the CIO's role and how is it changing?
- Who are the people in that role: Where did they come from, what degrees do they have, when do they plan on retiring or leaving?
- Who are the people who aspire to the CIO role: Where are they now, when will they be ready, what concerns them?
- What skills are needed to be a CIO? How will the next generation get those skills? How are potential candidates being nurtured? Who has responsibility for doing that?
- What can a person who aspires to be a CIO do to prepare for the job?

Analysis of quantitative results from the ECAR survey, the EDUCAUSE CDS, and the EDUCAUSE Current Issues Survey yielded the following key findings:

- 45% of leaders responsible for their institution's primary IT organization have the title of "CIO," which rises to 70% in doctoral institutions; we often refer to all of these leaders as CIOs even though actual titles differ.
- 72% of senior IT leaders reported that they often or almost always participate in executive discussions about the IT implications of institutional decisions.
- 75% of current CIOs come from within higher education, and one-third held a previous CIO position.
- 80% of current CIOs have an advanced degree, and 25% have a PhD; those with PhD's most commonly work at doctoral institutions.
- 31% of current CIOs expect to retire or leave higher education within the next six years; 52% in 10 years.

- 18% of respondents aspire to become a CIO; 61% do not, an increase of 10% since 2008. The rest don't know. Of those currently in executive IT positions, 32% aspire to become a CIO in the next six years.
- 48% said politics was a key reason for not wanting to be a CIO; 33% said stress; 15% were concerned about not having the management or technical skills necessary; 12% were concerned about not having proper leadership skills.
- 100% of current CIOs rated communications skills as important for success as a CIO; 31% rated technical proficiency important.
- Among respondents to the survey, 113 individuals who currently hold the senior-most IT position at their institution plan to vacate that position within six years, and 420 individuals identified themselves as aspirants for the senior-most IT position within that time frame; 44% of these aspirants are already in executive non-CIO positions.
- 36% of people aspiring to be a CIO have a mentor, and that makes them more satisfied with their development opportunities by a factor of 2 to 1 over those who do not.

Evolution of the CIO Role

From "The Evolution of the CIO: An EDUCAUSE Issues Brief"⁴ (October 2009), interviews with 14 CIOs:

What I used to love about being CIO was getting the chance to be directly involved in small, cool projects led by faculty; now, I find myself spending most of my time talking with security auditors and those involved in regulatory compliance.

Within the past five years, I find myself spending more time on contracts than technology.

As technology moves forward, the CIO role is becoming less of a technologist and more of a business strategist, communicator, and financial manager ... relying on a different skill set. The challenge here is that CIOs have had to adapt and acquire a new set of skills....

Brian Hawkins, president emeritus of EDUCAUSE, wrote in 2004:

The executive team—and ultimately the CIO candidate—must understand that the role of CIO is not about technology itself; rather, it is about the ability of a campus to achieve its goals and objectives through technology.⁵

Observers of the IT landscape over the past several years have highlighted the general shift from CIO-as-technologist toward CIO-as-business-leader, fully participating at the senior level in the management of his or her organization.⁶ CIOs still deal frequently

with technology, and whether they are full participants in senior management or not is open to question. But there is no doubt that most CIOs are going beyond technology in accomplishing their jobs, recognizing that their roles are to help achieve institutional goals through more effective use of IT. Recently hired University of Wisconsin–Madison CIO Bruce Maas recounted senior administrators’ growing interest in his input during his tenure at the University of Wisconsin–Milwaukee: “Communicating that I am all about ‘the business’ and not just about ‘IT’ opened doors.”

The job of the CIO is a broad one, requiring understanding and skills in multiple domains within the areas of technology and management. Meredith Weiss, in her recent study of CIO literature, found that “[T]he CIO in higher education may be expected to assume any of more than 50 distinct roles, many requiring differing skills, abilities, attributes, and expertise.”⁷ Regardless of whether the CIO is a member of the president’s council—or whether in fact the senior IT leader even has the title of CIO—the person holding the senior IT job must have a thorough understanding of the goals of the institution and of how it works; of the goals of its students, faculty, and administration of which he or she is a part; and of disciplines spanning academic research, teaching and learning, general management, strategic planning, operations, personnel, finance, marketing, law, and, yes, technology. The CIO gets to look up, down, and sideways at all parts of the organization. “CIOs, [almost] more than anyone else, are very knowledgeable about the institution because they work with the administrative systems that support the functional offices. You end up knowing a lot more about how the whole university fits and functions together than most people on campus,” explained William Morse Jr., chief technology officer and associate vice president for technology services at the University of Puget Sound. And that provides the perspective and responsibility to be competent in advancing the broadest goals of the educational institution he or she serves.

As some interview participants move beyond technology, they talked about the impact on themselves and their IT organization. For example, Brian Kraus, director of Information Technology at Volunteer State Community College, bemoaned the lack of time to evaluate and to understand new technologies, “to make sure that I can discuss them intelligently.” Others, such as Marcus Kerr, chief information officer at Texas Wesleyan University, found that “it pushed me up and out of operations. There is too much going on and too many activities. I spend my time managing relationships with the senior leaders and deans, so I distribute more responsibility to my divisional directors.” University of Wisconsin–Madison’s Maas found that he could represent his staff better by being more of an institutional player. “I can see things coming, avoiding those ‘gotcha’ surprises for my staff. And when I form a good relationship with the person at the top, it usually cascades down to other people in the other organization, who similarly feel comfortable with my staff.” Weiss’s technology leadership study found that “CIOs and their staff facilitate the success of many throughout the higher education community, improving education, scholarship, and service and better positioning the higher education organization for the future.”⁸

Doing More

Across higher education, an array of functional areas may report to the CIO. The CDS asks about 24 different functions and whether they are the CIO's responsibility. "Standard" functions (selected by over 90% of all institutions) were user support/desktop computing, administrative information systems, network infrastructure, data center operations, and IT security and policy, with telephony not too far behind at 87%. Table 1 illustrates how 14 other functional areas reporting to the CIO break down by Carnegie classification.⁹

Table 1. Functions Frequently Reporting to the CIO, by Carnegie Classification

Function	DR EXT	DR INT	MA I	MA II	BA LA	BA GEN	AA
Identity management	99%	98%	93%	92%	97%	81%	85%
IT planning and budgeting	84%	93%	94%	88%	91%	85%	90%
Student computing	86%	84%	90%	92%	96%	92%	84%
Academic computing	100%	84%	89%	92%	94%	87%	77%
Web support services	93%	87%	86%	77%	88%	75%	76%
Instructional technology	79%	75%	82%	73%	89%	77%	64%
Multimedia services	69%	69%	79%	77%	81%	67%	61%
Student computing	65%	51%	63%	58%	70%	54%	53%
Research computing	68%	58%	35%	19%	46%	25%	11%
Print/copier services	19%	24%	24%	58%	40%	56%	40%
Distance education	12%	31%	37%	38%	20%	37%	35%
Library	5%	18%	18%	12%	30%	8%	12%
Computer store	31%	15%	10%	4%	21%	10%	4%
Mailroom	2%	5%	3%	12%	10%	12%	8%

Source: 2009 EDUCAUSE Core Data Survey

Key

- Class with highest percentage of institutions responding that the function reports to the CIO
- Class with lowest percentage of institutions responding that the function reports to the CIO

Reviewing 2005–2009 CDS data about these functions, we can get a longitudinal view of reporting patterns. In 2009, more than 50% of doctoral (DR EXT and DR INT) and baccalaureate liberal arts (BA LA) schools reported 16–20 functions; only about 10% of associate's (AA) and baccalaureate general (BA GEN) schools reported that many. Over the period 2005–2009, more than half of institutions reported adding more functions to those responsibilities, while 21% reported reductions (28% reported no change). The most commonly added function was IT planning and budgeting, which was added by 27% of institutions, with 87% of doctoral institutions now reporting this function under the CIO but only 55% of BA GEN schools doing so. Emergency notification systems and IT security risk assessment are also being added. Other important functions included under CIO responsibilities were academic computing, multimedia services, student computing, web support services,

and, in doctoral institutions, research computing—and that’s just the formal responsibilities. Interviewees for the 2011 ECAR study highlighted more organic changes, such as taking on responsibility for IT systems or services performed by other parts of the organization, e.g., e-mail systems or individual administrative systems. The University of Puget Sound’s Morse believes that more functions reporting to central IT “reflects the growing role of technology, and hence the CIO, at an institution.” He noted that the role of the CIO is becoming less that of a manager of a huge infrastructure and more that of a manager of business relationships inside and outside the institution. “The senior administration now sees a person who has value at the higher education administrator level, not just at the IT level. They see someone who has broader interest and broader expertise to bring to the institution.”

Adding more functions impacted interview participants’ IT leadership roles in other ways as well. For example, the CIO must deal with a variety of organizational issues. When telecommunications responsibilities were merged into Volunteer State Community College’s central IT organization, Kraus used a VoIP project to help bring the two organizations together. Both areas evaluated the systems and “everyone got a fair vote in the final decision.” But not every new function may join the IT organization. In that case, University of West Florida’s Michael Dieckmann, interim vice president for administrative services and CIO, suggested that it is important to learn how to operate with multiple cultures. “You can’t waltz in and think the IT methods and strategies will automatically work. You can’t automatically take these new functions and shoehorn them into the IT departments, or into the same IT departmental culture.”

Workforce management issues come into play, too. The expanded organization gave Kraus the opportunity to swap staff members into more suitable positions. On the other hand, University of West Georgia’s CIO, Kathy Kral, faced a staffing crisis when the primary support person left after central IT assumed support responsibilities for the Business and Finance area’s PeopleSoft implementation. While she finds a replacement, the Business and Finance functional users are assisting with strategic planning.

New functions can translate into new operational synergies. University of Puget Sound’s Morse used the addition of photocopying to build an institutional document creation and management strategy. “With a combined printing and photocopying services organization, we could analyze the how’s and why’s of printing on our campus, enabling us to consider new concepts and capabilities, like incorporating document management into our ERP implementation project. Now we can begin to make good choices from an institutional perspective,” he explained. “Adding a new function does take time and effort, so I want to create efficiencies, not more work.”

University of West Florida’s Dieckmann found that adding the Business and Auxiliary Services group to his portfolio enhanced his awareness of user needs. “As the head of Business and Auxiliary Services, I wonder about their IT support needs and how to IT-enable their operation. I can get both sides to play together, helping

the IT staff to understand how they look from the client's perspective and appreciate some of the client's pressures, while helping the functional clients better understand the realities of IT."

The CIO Across Industries

IBM interviewed more than 3,000 CIOs for its 2011 Global Chief Information Officer Study¹⁰ and produced a wealth of information about the job and the ways it is viewed in an organization. They identified four major mandates for the CIO¹¹: streamline operations and increase organizational effectiveness (which they label "Leverage"), refine business processes and enhance collaboration ("Expand"), change the industry value chain through improved relationships ("Transform"), and radically innovate products, market, and business models ("Pioneer"). The most common mandate in almost all industries surveyed (except for financial) was Expand. Among higher education CIOs, 45% were classified as operating under this mandate. CIOs with an Expand mandate have a balanced mix of responsibilities from fundamental to visionary, and they use integration and collaboration as key to the position. Approximately one-third of higher education CIOs reported that their focus is on the fundamentals (Leverage)—the highest percentage of any industry.

Basic characteristics of the higher education environment dictate the role for the CIO: In general, institutions of higher education have not expressed a desire to make fundamental changes in their operations (as is seen in the financial industry, for example). Higher education prides itself on moving with more deliberation and consideration than is evident in other industries. This approach has worked well in the past, for, as one dean put it, "How many for-profit corporations get to celebrate their 100th birthday, or their 200th?" Unfortunately, none of us will know if this approach works as well for the next 200 years.

Participating in Institutional Decision Making

One of the factors associated with being part of senior leadership in an organization is being a member of its senior management council. In higher education, this is often the president's or chancellor's cabinet. The 2004 ECAR leadership study noted that "IT leaders who are members of their president's cabinet report a considerably broader role at and impact on their institutions.... Cabinet-member IT executives report much more interaction with senior management—especially with the president/chancellor, the board, and academic leadership."¹² Brian Hawkins, president emeritus of EDUCAUSE, said in a 2004 paper that "many [prospective CIOs] do not feel that they can accomplish the kind of institutional transformation that IT promises or meet the expectation of the campus community without the chance to be part of the executive team [by being on the cabinet]."¹³ Patrick Burns, vice president for IT and dean of Libraries at Colorado State University, sees more focus on operational projects at the expense of strategic ones and wonders about its impact on the role of IT leadership: "As IT budgets are cut, senior administration is not relaxing our

job's strategic aspects; rather, they are enhancing our focus on operational efficiencies. [The issue is how] we can be strategic in a time of reduced resources, reduced staff, and reduced budgets.... As we devote more energy to operational issues, is the president going to question our role and appropriateness at the cabinet and ask us to step down?" Of course, being a member of the cabinet isn't the only way to participate in institutional decision making, nor does membership necessarily mean participation, as the statistics from CDS show.

Overall, participation on senior management councils has ranged from 46% to 49% over the past five years, although 91% to 92% of those with the title of vice president were members of senior councils but only 17% to 21% of directors were.¹⁴ In the 2011 ECAR Workforce study, 72% of CIOs reported that they often or almost always participate in executive discussions about the IT implications of institutional decisions, 73% in discussions about institutional administrative directions, and 30% in discussions about institutional academic directions. However, these percentages differ significantly by representation in the president's cabinet, as shown in Table 2.¹⁵

These data indicate that far more CIOs participate in institutional decision making (with the exception of academic decision making) than are members of presidential cabinets. For example, South Dakota State University's Michael Adelaine, vice president for IT, discussed how he built a strategic relationship with the president "by talking to him regularly without the intermediaries, because many of the issues that come forward have an IT component." Now they collaborate to enhance the institution's research activities. "The impact is that I can outline a structure and dialogue directly with the president, tie it to the overall strategic goals, and move forward." Being on the cabinet may make it easier to get to know the key deans and vice presidents—even the president—and their interests and concerns, but that can be accomplished in other ways, and many CIOs are finding those ways. As one participant said in a 2009 ECAR research study, "I get more work done in the campus Starbucks than just about anyplace else, meeting with colleagues and key stakeholders ... helping to connect the dots regarding IT's role in major institutional successes"¹⁶

Table 2. CIO Participation in Institutional Decision Making, by Representation in President's Cabinet

Cabinet Representation	Almost Always or Often Participates in Decisions on:		
	IT Implications	Administrative Directions	Academic Directions
Participant in president's cabinet	89%	85%	43%
Non-participant in president's cabinet	56%	62%	18%
Overall	72%	73%	30%

Over the five years of CDS data included in this study, more than 200 institutions either added or removed the senior IT officer from the senior leadership council (more than 20% of all schools reporting, but fewer than 5% in any one year). While

not changing very rapidly, membership on the senior leadership council is not static, and when it does change, it usually does so when leadership changes. Table 3 describes senior council membership by senior IT title.

Table 3. Senior Council Membership, by Senior IT Title

Title	IT Leaders by Title Participating in Institution's Senior Council				Percentage Change
	2005		2009		
	Percentage	Number	Percentage	Number	
CIO	53%	192	50%	244	-3%
Director	17%	261	21%	205	4%
VP	91%	176	92%	172	1%
Associate VP	31%	61	41%	51	10%
Executive director	26%	35	25%	36	-1%
CTO	38%	24	42%	31	4%
Vice provost	39%	28	52%	21	13%
Assistant VP	16%	25	19%	16	3%
Associate provost	36%	22	40%	15	4%
Vice chancellor	100%	20	100%	15	0%
Dean	55%	12	69%	13	14%
CITO	67%	15	27%	11	-40%

Source: 2005 and 2009 EDUCAUSE Core Data Surveys

Note: Percentage of all schools reporting senior council membership.

Trends in CIO Titles

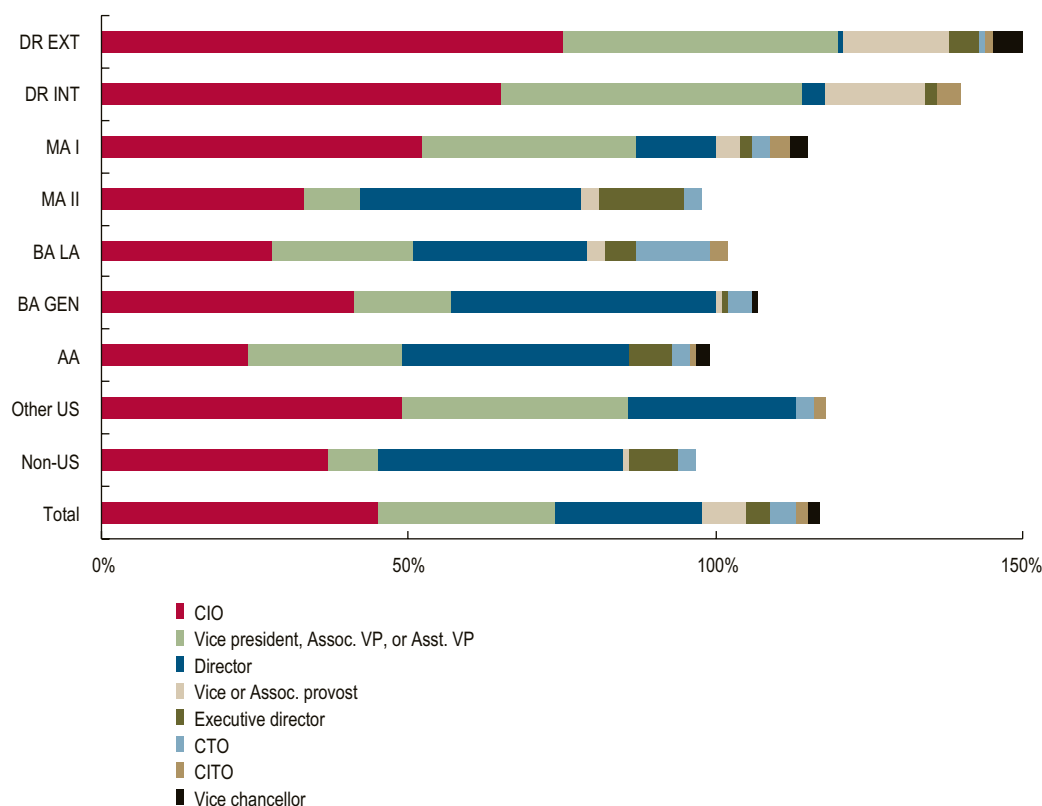
The 2009 CDS annual summary noted that "... exact titles for administrators vary greatly across higher education" In fact, over the five years studied, respondents to the CDS survey reported more than 640 distinct titles for the "highest ranking technology administrator/officer" on their campuses. Anyone raising the question of standardization of IT across higher education must surely start here!

There has been some recent discussion about whether senior IT officers are being downgraded in their organizations. To get a more consistent view of how titles have changed over time, we analyzed data from the 683 institutions that reported to CDS in at least four out of five of the years 2005–2009. Overall, there has been an increase in use of CIO and similar titles (CTO, CITO) during this period, from 36% of institutions to 52%, with increases in all Carnegie classifications.

The three most commonly used titles are CIO, director, and vice president, combined with words such as "information technology," "information services," or the like. We are not saying that the title makes the position, but there has been a small shift away from the use of director to use of CIO over the last five years. The time trend is negligible compared with the significant differences found among Carnegie classifications.¹⁷ In 2009, only 24% of associate's degree institutions used the CIO title, versus 75% of doctoral-extensive institutions. In

2009, MA II, BA LA, and BA GEN institutions used CIO and director in about equal numbers, while doctoral institutions barely used director at all. Doctoral institutions also commonly use CIO in conjunction with another title such as vice president or vice provost. Other types of institutions exhibit more variability in choice of titles. Using data from the 2009 Core Data Survey, Figure 1 illustrates the most-used titles by Carnegie class.

Figure 1. Most-Used Titles, by Carnegie Classification



Source: 2009 EDUCAUSE Core Data Survey

Note: Percentages add up to more than 100% due to compound titles.

Trends in Reporting Relationships

Senior IT officers' reporting relationships vary significantly by Carnegie classification, but they most often report to the highest-ranking administrative or business officer (34%),¹⁸ president or chancellor (30%), or highest-ranking academic officer (26%)¹⁹—numbers that have not changed appreciably since at least 2003 (33%, 30%, and 28%, respectively).²⁰ During the period 2005–2009, 110 institutions, approximately 11% of respondents, reported a change in the CIO's reporting line in CDS, from reporting to the president or chief academic officer to the chief administrative or financial officer, most often when the senior IT leader changes. This does not constitute a statistically significant trend but is something that has raised notice in the CIO community. Among institutions responding to CDS, 87% have had no shift in reporting relationships from 2005 through 2009.

CIOs whose reporting lines have changed note the importance of maintaining relationships widely across the organization. Fred Miller, CIO of Furman University, said now that he no longer reports to the provost, he has “to make sure to continue good collaboration with the academic areas,” but he also notes that IT seems to be getting more resources now that it is reporting to the CFO. UW–Madison CIO Maas reported to the provost when he was at UW–Milwaukee but wanted to make sure he was “aligning very closely with the CBO” for just that reason. To illustrate his interest, Maas became active in the Central Association of College and University Business Officers (CACUBO) and presented jointly with a UW System CBO at the most recent conference and also presented with his CBO through EDUCAUSE. Neeraj Kumar, CIO at Roosevelt University, also sees benefits in reporting to the CFO. The CFO is truly interested in IT-related improvements and is able to take more time than the president to listen and discuss how ITS can make positive contributions to the institution. “I am happy that I report to an individual that I know is listening and can help me make positive contributions. When looking at an IT leadership position, you should evaluate not your potential boss’s position, but rather whether this person is truly interested and influential in enabling IT-related improvements,” Kumar stated. Going back to 2004, EDUCAUSE President Emeritus Hawkins noted that “the direct reporting relationship is often focused on too much. The key point is whether the CIO is part of the executive decision-making team on a campus.”²¹

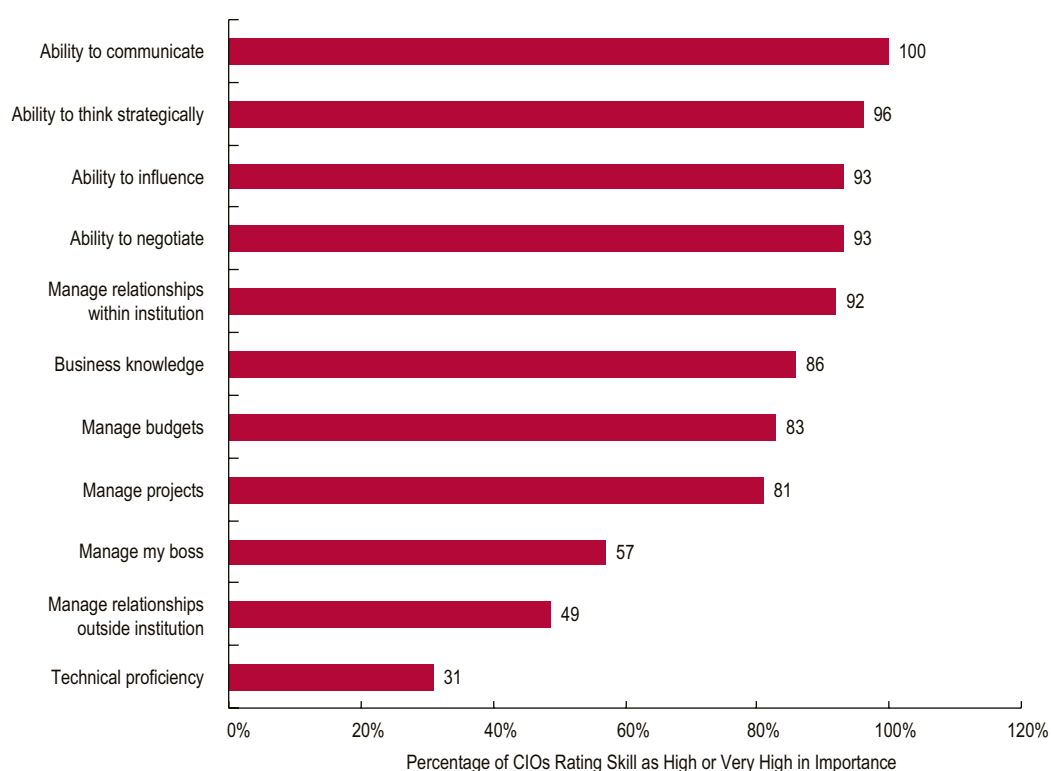
A key point from the data is that job titles, reporting lines, participation in institution-level decision making, and membership in the executive council have all remained fairly stable over the past five years. Differences across Carnegie classifications are generally much larger than variation over time.

Skills: What the CIO Needs to Know

“The CIO is not in the ‘IT box’ anymore,” said University of West Florida CIO Dieckmann, and CIOs know it. Every CIO respondent (100%) to the 2011 ECAR study indicated that communications skills are important to the job (high or very high), while only 31% put technical proficiency in the same category. Aspiring CIOs know this too. As one said, “[You can] do everything else well, but if you can’t communicate well, none of the rest matters.”²² Technology leadership researcher Weiss noted that “not only should the CIO prepare a sound bite that concisely states technology goals, plans, and achievements but also know how to communicate effectively with the media in less desirable situations, such as discussing a security failure.”²³ And when it comes to technology, proficiency may not be the issue, but rather a broad general knowledge that lets the CIO act as a high-level “technology generalist.” Prince George’s Community College’s Joseph G. Rossmeier, vice president for Technology Services, said the CIO needs “to have a good sensitivity to the more expanded role of technology—instructional technology, security, mobile applications, etc.—and how you effect change [through technology] within your institution.”

Almost all CIOs noted the importance of strategic thinking and planning and the ability to negotiate, to influence, and to manage other relationships within the institution. The CIO's job has become a social/political role as well as a technology one, to the point that knowing how to introduce a new technology is as important as knowing which ones to introduce. One of the focus group participants in the 2008 ECAR study put it simply: "The successful CIO must be able to manage and succeed at the organizational politics at the university."²⁴ In an interview as part of the 2011 ECAR study, Baylor University's vice president for IT and dean of University Libraries, Pattie Orr, gave numerous examples of using the "softer side" of IT leadership, for example, creating an iPad user group among Baylor senior executives to help them use and understand new technology. "The executives enjoy the sessions, help each other out, and get to learn firsthand about the value of IT in their daily work routine," said Orr. CIOs' ratings of the skills needed to be a successful CIO are depicted in Figure 2.

Figure 2. CIO Perceptions of Skills Needed to Be a Successful CIO



Being prepared to take on the job of CIO isn't just about skills. It is also about broad-based organizational background and understanding. Don Oppenheimer, associate dean and CIO at Harvard's John F. Kennedy School of Government, describes the role of the CIO transforming to one of a change agent. "This means the position becomes more strategically oriented, working with academic and administrative leaders to determine how IT can facilitate institutional change: help to define the change, to

create the solution, and to execute the change.” Kevin Lyerla, executive director of IT at Friends University, sees the CIO as “the person who creates a cohesive structure that aligns IT with institutional goals and vision, weaving constituent needs and shrinking budgets simultaneously when operationally and strategically prioritizing and allocating IT resources.” Dean College’s CIO J. Darrell Kulesza observed, “It is not all about technology. It is about the understanding of business requirements and institutional strategic goals as well as effective communication in business terms. You need to understand the user’s business goals so you can start planning a supportive technology strategy. You need to make them aware of IT’s essentiality in their planning because inevitably their project is going to have an impact on IT.”

This echoes what university technology leaders are saying in a variety of forums. In Debra Allison’s study of CIO literature,²⁵ she noted five themes for skills and competencies:

- Basic competency of excellence in operations and production management
- Ability to focus on the institutional mission and needs and serve as an institutional innovator
- Ability to proactively capture opportunities to advance the institution, rather than merely meeting the requests presented to the IT organization
- Skill in negotiation and contracts as service models to provide new opportunities in the “cloud” and interinstitutionally
- Skills in effective collaboration across the institution and with external partners to reduce duplication of services and associated costs, improve efficiencies, and improve service quality

But lest we forget, the CIO’s job is still about technology, and that technology is much more complicated than it ever was before. Without a staff that can deliver on basic, reliable operations of the technology, the university will be loath to adopt new ideas for technology development and use. A participant in “The Evolution of the CIO” study said, “The door to being a leader is execution, and if you can’t build IT organizations to execute, you’re never going to get the opportunity to participate in senior institutional leadership.”²⁶ IBM’s 2009 Global CIO Study sums up this issue in the complementary, and sometimes conflicting, roles the CIO must embrace:

- An insightful visionary, and an able pragmatist
- A savvy value creator, and a relentless cost cutter
- A collaborative business leader, and an inspiring IT manager²⁷

How the CIO Spends Time

To further make the point that the CIO job is not just a technical job, one has only to look at responses to the EDUCAUSE Current Issue Surveys. In 2011, almost half

of CIOs reported that funding issues are taking up a significant portion of their time (see Table 4)—and it has been that way for several years. They are spending their time on strategic planning, governance, policies, building relationships, staffing, and service and support, as well as on administrative information systems and infrastructure issues. Even 10 years ago, strategic planning, staffing, and funding made it into the top five ways in which CIOs spend their time.

Table 4. Top 10 Issues That Consume CIO Time*

Issue	Response Percentage
Funding IT	48.7%
Administrative/ERP/information systems	39.0%
Strategic planning	34.0%
Governance, portfolio/project management	30.3%
Policy development and compliance	26.0%
Security	23.3%
Infrastructure/cyberinfrastructure	21.7%
Collaboration/partnerships/building relationships	21.3%
Staffing/HR management/training	20.7%
Service and support (formerly service delivery models)	19.7%

Source: EDUCAUSE Current Issues Survey, 2011, Question 3.

* Question text: “Which issues are you, as an IT leader or administrator, spending most of your time addressing? Check up to five [5] issues.”

The Importance of Understanding Finances

For nine out of the past 10 years, “IT Funding” has been number 1 or number 2 on the hit parade of EDUCAUSE’s Current Issues for CIOs (it was number 3 in 2008).²⁸ From 2006 through 2011, the largest percentage of a CIO’s time was reported to be devoted to funding issues. IT funding is a complex (too complex?) amalgam of institutional allocations, chargebacks, fee-for-service, product sales, cost recovery, direct research, and maybe even a donation or two. Rarely in the corporate world does one see this level of complexity in IT finances. This complexity often gets in the way of making the kinds of decisions that will facilitate IT initiatives for the betterment of the institution.

The higher education CIO must have a thorough understanding of how and why these funding complexities exist, both to explain their implications to IT service delivery and to search for improvements. These activities become more critical in financially challenging times, as several interview participants discussed. University of West Florida’s Dieckmann summed it up as follows: “No matter where you are in the organization chart, you are a major player on the financial side. The huge challenge is to make it understandable to everyone else because they see IT financing as a black box. People see the huge, aggregated IT budget and think you are sitting on pots of gold, with lots of fat to trim. You are in the midst of planning

and budgeting as the provider of information, and you have a seat at the table to determine how dollars are allocated.” If the CIO doesn’t have a complete understanding of why the budget is the way it is, those supposed pots of gold (which are rarely there) will be carried away.

Skills That Add Value

When asked what epitomizes their value as a senior IT leader, interview participants didn’t point to a landmark project or achievement. Rather, most felt success stemmed from many things, ranging from creating a good culture within the IT organization, to effective communication and relationship building across their institution, to having an appropriate governance structure—all things indicative of the skills today’s and tomorrow’s CIO must have in abundance.

The CIO is the prime mover in creating a positive organizational culture within the IT organization. “It works when people understand your priorities and when you create an environment that lets them make their own mistakes,” explained Perry Hanson, Brandeis University’s vice president and vice provost for Libraries and Information Technology. For example, Hamilton College’s vice president for Information Technology, David Smallen, has his entire group meet every morning for five minutes so that staff members can give an update on the day’s activities and “reinforce our core belief of information sharing.” Others pointed to enhancing organizational culture by talking to staff informally and recognizing them for accomplishments. When people introduce Linda Deneen, the University of Minnesota Duluth director of Information Technology Systems and Services, as the manager of IT for all of the campus, she corrects them and credits her staff. “They are a great staff and I like to give them credit. Keeping a complex constellation of technology systems and services working well cannot be done by one person.”

CIOs also talked about the importance of communications across the campus to build integrity, trust, and understanding of IT’s value. Holly Buchanan, CIO, Administration and Academic Systems, at the University of New Mexico Health Sciences Center, believes that “communication is one of the primary processes and functions that need to be in place in order to succeed. But it is often the first to be jettisoned when there are crises, pressures, and insufficient resources to deliver services.” Baylor University’s Orr feels so strongly about the importance of communication that she appointed a marketing and communications officer in her organization. “The CIO may be doing a great job, but the rest of the campus may not know about it, nor can they explain the value of IT at their institution. IT people get so busy that we don’t always have the time, the connections, and the expertise to ensure the campus understands the value of IT.” To help constituents understand IT’s value, her marketing and communications officer regularly creates a full-color, two-page fact sheet in a dashboard-like format to educate the board of regents and other senior administrators at a glance about central IT activities: e.g., the number of servers ITS manages, the number of help desk tickets handled, the number of mobile devices supported on the network, the number of web page hits, the number of security cameras on campus,

and the size of the ITS budget. “People see it and are amazed at how IT touches so many facets of the university. It has been very effective,” Orr stated.

The importance of relationship building permeated the conversations, too. Deneen explained, “I focused hard on getting the relationship in place so I have credibility with the person. Then I can worry about the technical details of whatever project we are discussing.” John D. Hoh, campus technology officer at Penn State Harrisburg, expanded on this view: “I learned early on that if you ask for a handout, you don’t get much. But if you ask to partner, that tends to open doors. I often start a conversation by asking the other person to help me find a solution. Sometimes my staff gets frustrated that it takes two years to get a project done because I have to build the appropriate relationships—trust and buy-in—and that takes time.”

Last, but not least, Brandeis’s Hanson and others cited the ability to create a governance structure “to create personal eyeball-to-eyeball contact with the users and to extend the sense of collaboration and inclusiveness to the institutional community.” When Orr arrived at Baylor, she created the Library/ITS Advisory Council, which is a shared governance organization designed to ensure purposeful communication, gain meaningful input and feedback, and assist in evaluating IT and library services from major constituent groups, including graduate and undergraduate students. The University of New Mexico Health Sciences Center’s Buchanan is commissioning a council of clinical, research, and education UNM health science leaders to prioritize IT projects and to advocate for collaboration and budgeting.

Demographics: Today’s CIOs

Today’s higher education CIOs are a varied lot, but often they

- are baby boomers, ages 46 to 64 at the time of the survey (74%);
- have at least a master’s degree (80%); and
- came from within higher education (75%).

Half of current CIOs have been in their position for more than five years. Overall, today’s higher education’s CIOs are somewhat less diverse than the IT management workforce at large, with 23% female and 8% non-White/Caucasian (versus 30% female and 23% non-White/Caucasian for the Bureau of Labor Statistics’ category “Computer and information systems managers”²⁹). CIO age and ethnicity in higher education show no significant variations across Carnegie classifications or gender (see Figure 3).

CIO Educational Background

CIOs are a highly educated group, with about 25% having a PhD or other terminal degree and 55% having a master’s degree. There is significant variation among these advanced degrees across Carnegie classifications, with PhDs being more prevalent at doctoral institutions and master’s being more prevalent at all others (70% at associate’s institutions).³⁰ This is similar to findings in Wayne Brown’s *2010 Study of the Higher Education Chief Information Officer Roles and Effectiveness*.³¹ Figure 4 depicts CIO highest institutional degree earned, by Carnegie classification.

Figure 3. Age of Higher Education CIOs (n = 308)

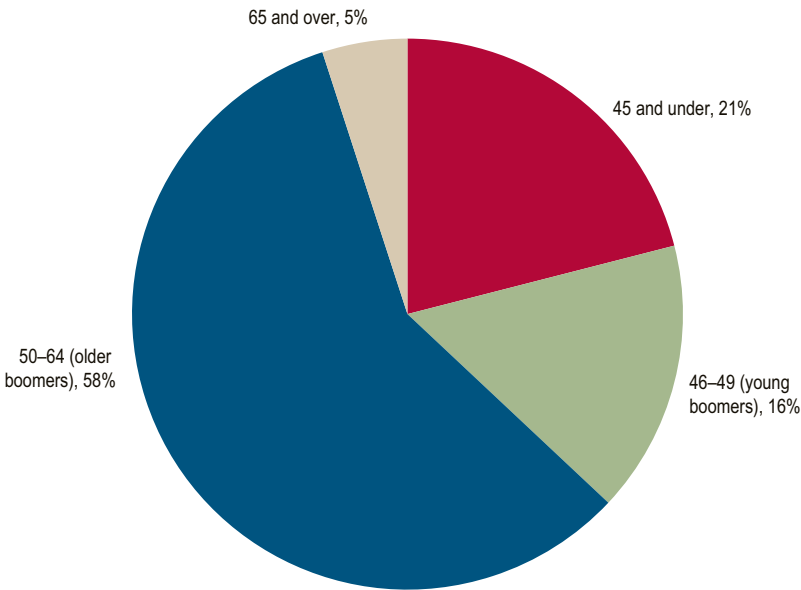
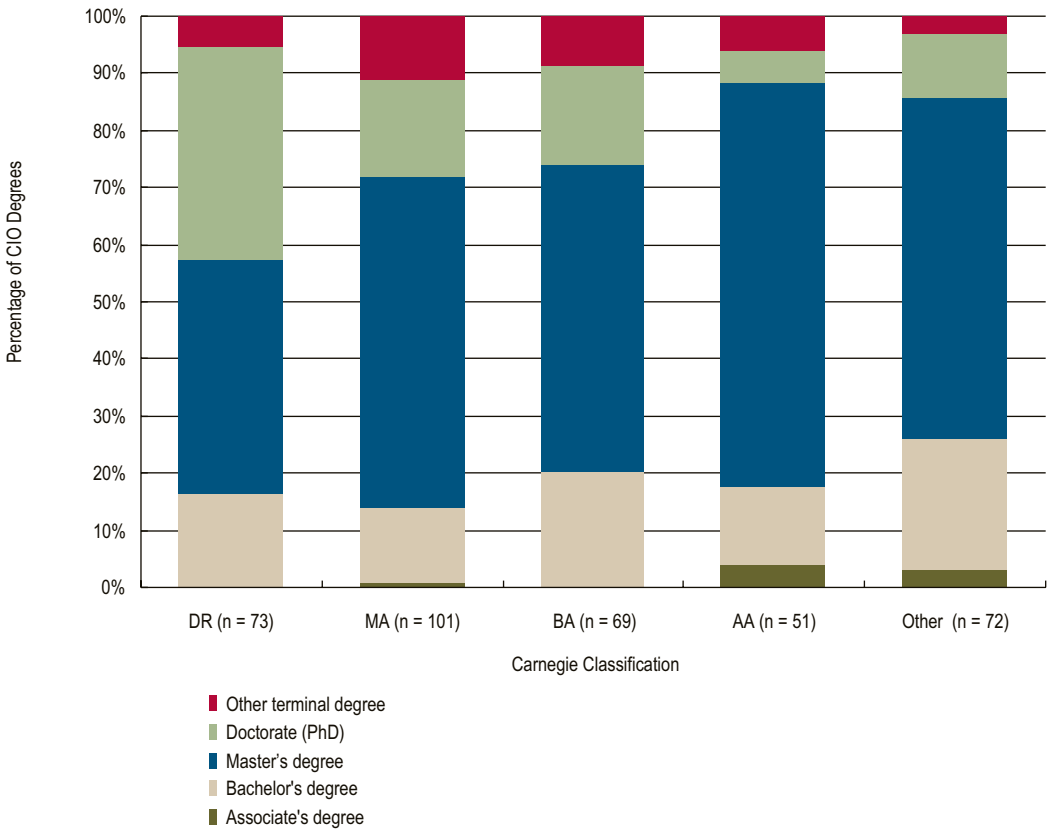


Figure 4. CIO Highest Earned Degrees, by Carnegie Classification

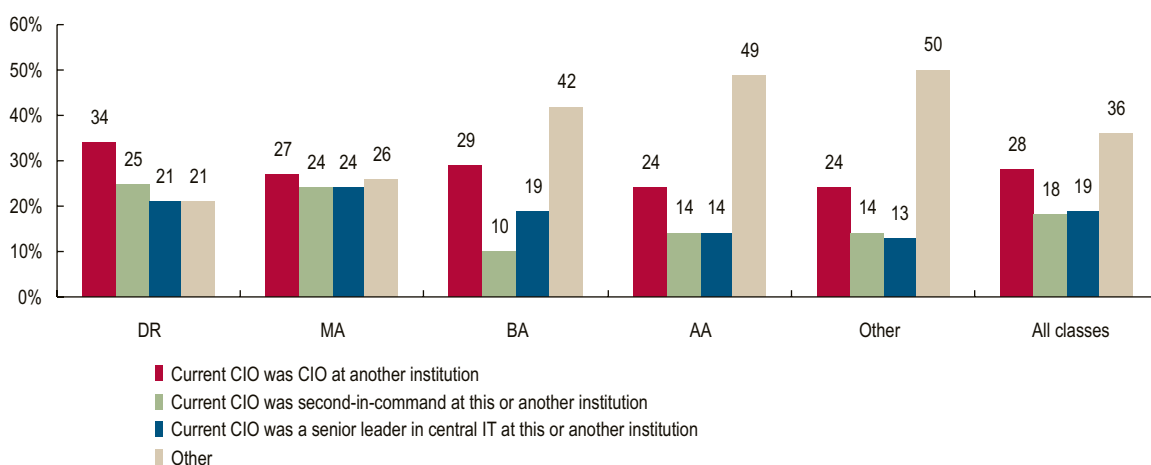


Where Today's CIOs Come From

Three-quarters of sitting CIOs have come from within higher education, split fairly evenly between coming from within their current institution and from another institution. This has not changed significantly since 2004 and does not differ significantly by Carnegie classification or gender. The percentage of CIOs coming from private industry or consulting has increased from 11% in the 2004 study to 18% in the current study. Although this increase does not reach statistical significance, it does suggest the possibility that the need for more business knowledge is leading to increased recruiting from industry. Among current CIOs, approximately 25% came from outside higher education. Other CIOs have come from the government and other nonprofits, and a few from the military and K–12 education.

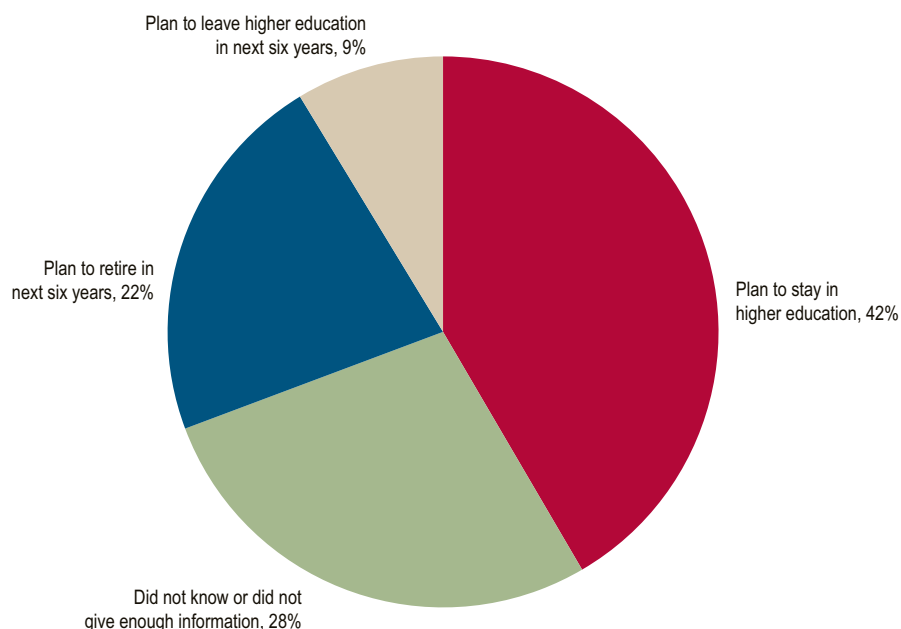
As Figure 5 illustrates, overall about 28% of current CIOs came from previous CIO positions, somewhat more at doctoral institutions (34%) and somewhat fewer at associate's institutions (24%). These numbers are similar to findings by Brown.³² Another 43% came from other executive IT positions (18% from a second-in-command position, 19% from a senior leader position in central IT, and 6% from leadership of a non-central IT group), a number that varies by Carnegie classification, although not by gender. Other CIOs have come from other IT or non-IT positions within the institution as well as from outside the institution (29% overall).

Figure 5. CIO Previous Positions, by Carnegie Classification



CIO Retirements: The Next Six Years

Among the 368 CIOs reporting their plans in the current ECAR study, 42% plan to stay in higher education for at least the next six years and 31% expect to retire (22%) or leave higher education (9%) over that time (see Figure 6). The 2011 ECAR study also found that 52% of higher education CIOs plan to retire or leave higher education within the next 10 years, similar to findings in other surveys.³³

Figure 6. CIO Plans to Retire or Leave Higher Education (Six-Year Horizon)

There is also some indication that the baby-boom generation will be working longer overall. Recent economic conditions have caused workers across many sectors to consider postponing retirement, and higher education CIOs are no exception. Pew Research found in 2009 that among workers in general 50–64 years old, average expected retirement age was 66, approximately four years later than for current retirees.³⁴ In the year prior to the study, more than half (52%) of people in this age bracket had considered delaying retirement. An additional 16% said that they never plan to quit working.

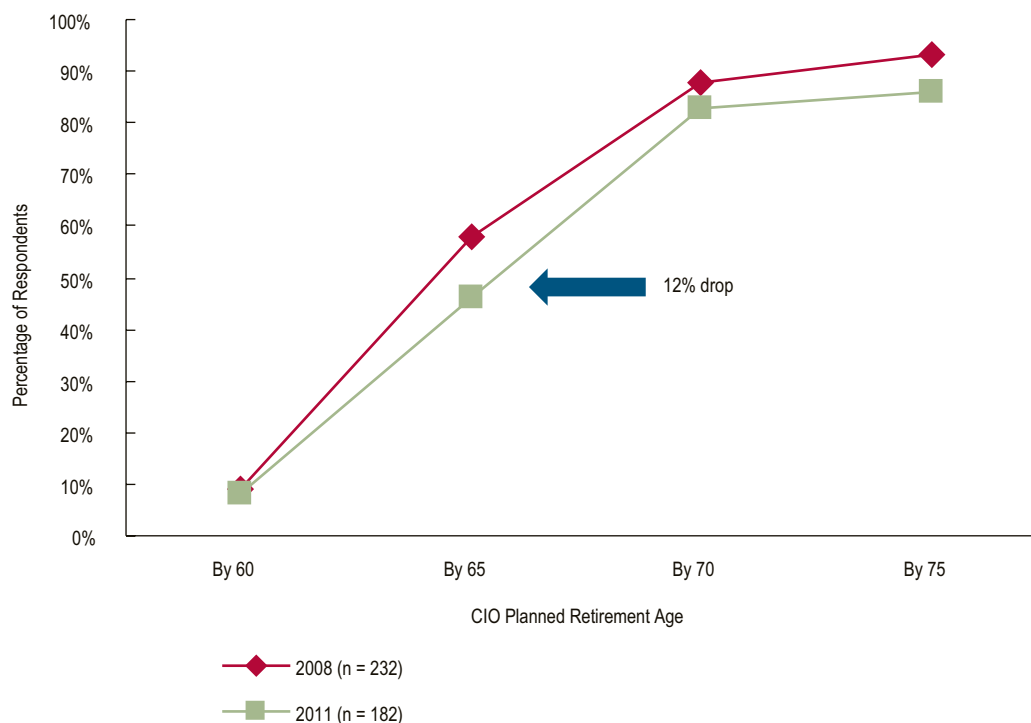
Considering CIO respondents who were over 50 when they responded to the surveys for the 2008 and 2011 ECAR studies, the percentage planning to retire at 65 or earlier has decreased from 58% to 46% (see Figure 7). Further, 13% of those in the 2011 study indicated that they don't know what their retirement age will be, versus only 7% in the 2008 study.³⁵

The eventual retirement of the current generation of CIOs has generated concern in the higher education IT community for several years.³⁶ For example, Prince George's Community College had a major hiring drive during the late 1960s and 1970s. Now many people are retiring and the college is losing so much institutional knowledge and history that the president directed her senior team to create an institution-wide succession planning strategy to identify successors and to capture retiring personnel's institutional knowledge.

Special Note: While we believe people responded as accurately as they could to the ECAR survey questions, a variety of phenomena are at work that may make it difficult to draw conclusions from these data. Retirement plans aren't fully under one's control. Health, family issues, and workplace changes can all unexpectedly

curtail or extend a career. On the other hand, studies have found that people's predicted retirement age increases as they age,³⁷ and you can see that we have to be careful about extrapolations from self-reported data when there are both positive and negative forces at work.

Figure 7. CIO Planned Retirement Age, 2008 and 2011 Comparison



The Next Generation of CIOs: CIO Aspirants and Non-Aspirants

CIO aspirants were asked to elaborate on why they aspire to a CIO position.³⁸ This open-ended question yielded text responses that are captured in the word cloud in Figure 8.

Among non-CIO respondents to the current ECAR survey, 18% said they aspire to be a CIO at some point in their careers, while 61% said they do not. Since 2004, the percentage of those who responded “don’t know” has decreased by about 10%; similarly, the percentage of non-aspirants has gone up by 10%. In the 2008 study, interest in becoming a CIO peaked at 23% (see Figure 9).

Of those currently in executive IT positions (i.e., those closest to being ready to be a CIO), 32% (186) said they aspire to be a CIO within the next six years. This compares with 45% in 2008.³⁹ Aspirations varied significantly by age of respondent, with those in the younger age brackets having greater aspirations to become CIOs. Among executive IT respondents under 40, 56% aspire to become CIOs, with an additional 28% unsure. Percentages then start to decline, and

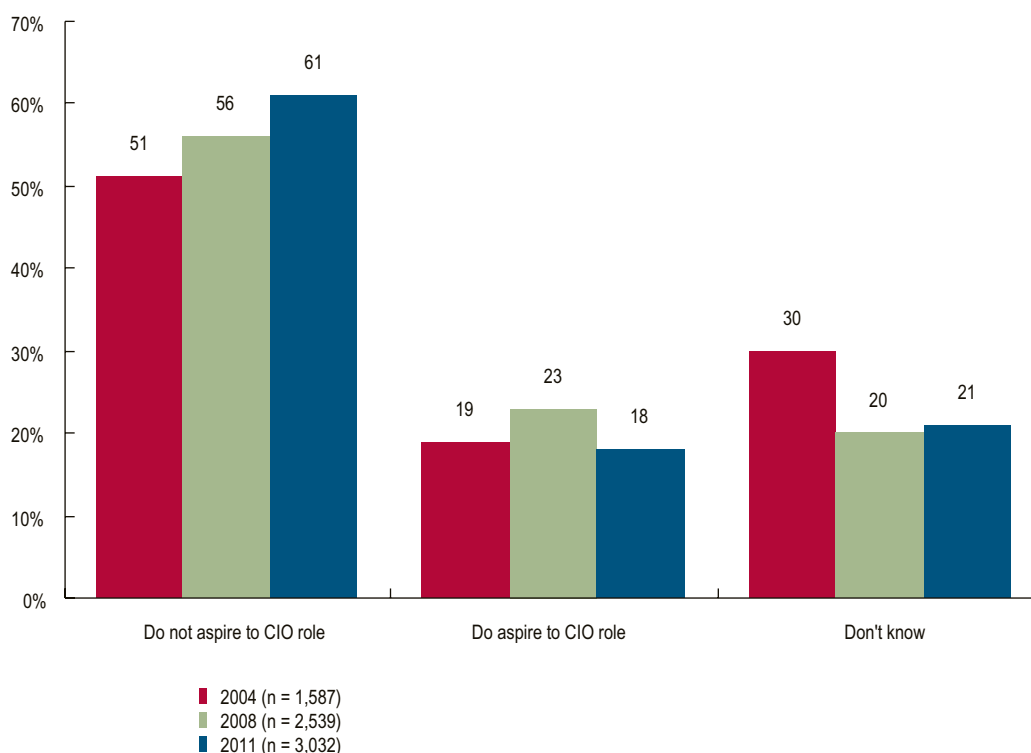
by their mid-50s, only 25% to 30% of executive IT respondents still aspire to become CIOs. Non-executive IT respondents are about half as likely to be aspirants as those in executive IT positions.

A key question is whether the interest in becoming CIO is declining and whether this is a problem for higher education. Are there enough people aspiring to be CIOs to fill the positions that are likely to open up? We address this in a later section.

Figure 8. Reasons IT Staff Are Interested In Becoming a CIO



Figure 9. Respondent Aspirations to CIO Role: 2004, 2008, and 2011



Appeal of the CIO Position

ECAR survey respondents who aspired to be a CIO elaborated their reasons in an open-ended question. Categorizing their answers, we found that the largest grouping involved a perception of readiness and qualification for the job. As one respondent stated, “I have made a professional career of higher education IT administration, and I consider a CIO position the pinnacle of achievement in this regard. I believe I have the vision and interpersonal skills to be a successful CIO, and believe I will work well as a CIO.”

A desire to make a difference within their institution was the second most popular category. The following exemplified respondents’ sentiments: “I have desired to have a positive impact both on the educational effectiveness of the college I serve, [to enhance] the efficiency and bottom-line costs [as well as] to communicate an overarching vision of how IT can be a strategic partner in reaching the college’s goals. It is clear to me that a good CIO can have a far-reaching positive effect on an institution, just as a bad CIO can be disastrous.”

There were also responses around the same issues but in a broader sense of interest and desire to enhance higher education in general. It is clear that those people who aspire to be a CIO are committed to both IT and to expanding the ways that IT can improve higher education.

Concerns about the CIO Role

Most people in higher education IT do not want to be a CIO. The reasons cited most often are politics and stress. There are three characteristics of respondents that differentiate their concerns: age, gender, and current position (executive IT or other).

Younger respondents are more concerned about politics than older respondents (54% for those under 50, 46% for those between 50 and 60, and 31% for those 60 and over). Stress is a smaller concern, and again declining with age (38%, 33%, and 31% for the same age groups). As noted earlier, having a PhD would not appear to be a big issue at most types of institutions, but men are more worried about this than women (32% versus 26%).

The one area where women’s concerns were significantly different from men’s was their perception that they do not have sufficient technical skills, listing this at almost triple the rate of men (24% versus 9%). This perception does not align with current CIOs’ reports about the skill sets required for the job, especially as cloud computing and other sourcing options mature. In general, however, the group of people not aspiring to be CIOs is quite confident of their skills: Only 15% are concerned about not having the requisite management skills and only 12% about not having the requisite leadership skills. And in the executive IT group, only 10% are concerned about not having the requisite management skills and 8% about not having the leadership skills. Table 5 illustrates the top reasons given by those who do not aspire to the CIO position. Our conclusion is that this group is confident they are ready to take on the CIO job—they just don’t want it!

Table 5. Reasons IT Staff Are Not Interested in Becoming a CIO

Reason	Executive IT Non-Aspirants	All Other Non-Aspirants
Political demands are too great	50%	48%
Stress is too great	28%	33%
Lack PhD or other terminal degree	27%	29%
Prefer to remain in technical position	12%	26%
Don't have technical skills CIOs require	11%	16%
Don't have management skills CIOs require	10%	15%
Hours are too long	12%	14%
Don't have leadership skills CIOs require	8%	13%
Wish to pursue a career outside IT	8%	10%

Are There Enough CIO Aspirants to Fill Anticipated Vacancies?

Over the next six years, 22% of CIOs (81) planned to retire and 9% (32) planned to leave higher education, according to their responses to the 2010 ECAR survey. On the same survey, 420 IT staffers indicated their interest in becoming CIOs during this time frame, with 186 of these currently in executive IT positions (see Figure 10). These numbers suggest that there will be roughly four *higher education* candidates for each open CIO position. At the same time, some CIOs come from outside higher education—currently that proportion is about one-fourth. Factoring non-higher-education candidates into the projection, one might expect there to be five or more *total* candidates for each open CIO position. Even with the additional openings created when CIOs move to other institutions or leave for non-retirement-related reasons, our results strongly suggest that there will be a sufficient supply of CIO candidates over the coming years.

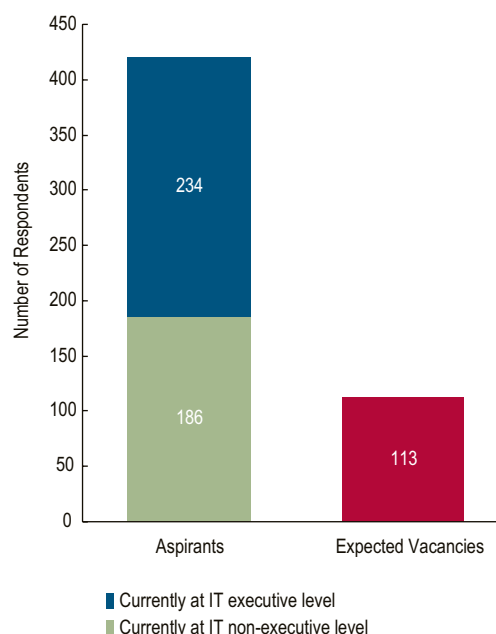


Figure 10.
CIO Aspirants
and Expected
Vacancies
(Six-Year
Horizon)

Getting Ready: Identifying and Preparing the Next Generation of CIOs

Dave Lambert, president of Internet2 (and former CIO at Georgetown and Cornell Universities), said that “[up to and including] my generation, no one came into this job prepared with the background and skills.”⁴⁰ But there are people now in IT departments who have been gathering that background and those skills for their

entire professional careers and have the aspiration to become CIOs. Are they ready? Or were they gathering the skills to become the CIO of the past rather than the CIO of the future? CIOs recognize that communication skills, political skills, negotiation skills, and business skills are all as important as, or even more important than, technical skills. What are the people who aspire to be CIOs doing to get them?

Staff development programs provided within the central IT organization are one important way to provide training for the next generation of CIOs. Brandeis's Hanson and Hamilton's Smallen were particularly emphatic about this, noting that even with budget pressure, these programs would be one of the last things they'd cut from their budgets. Smallen believes a robust development program makes Hamilton's central IT a more attractive place to work. "It is an incredible opportunity to grow. We can't guarantee you'd want to stay at Hamilton forever, but you will be prepared for whatever comes next because you will have advanced while you worked here." Baylor's Orr weaves professional development, such as presentations and participation in professional organizations' committees, into staff member performance reviews, where they are assessed—and rewarded. "Encouraging professional development adds to staff members' skills, enhances the national reputation of the organization, and keeps people happy," Orr believes.

The job of CIO requires a very broad set of knowledge. Again from Lambert: "The biggest mistake we make is to not expose our emerging leaders to enough disciplines, to enough arenas of leadership and management." What can be done to correct that?

Succession Planning

The 2010 ECAR survey addressed the questions of who *wants* to be a CIO and also of who *gets* to be a CIO. Three-quarters of higher education CIOs come from within higher education (slightly more than half that from other than their current institution). If this percentage holds for the future, most of the next generation of higher education CIOs currently work in our community, even within our own institutions. Indeed, 64% of CIOs say they have identified a successor (up from 54% in 2008). However, 42% of these and only 4% of CIOs who have not identified a successor believe their successor will be recruited from within their own organization. Overall, this means that 27% of CIOs think they know their successors.

There appears to be a real advantage in having the next CIO come from within the institution. As Prince George's Community College's Rossmeier said, "The CIO is a very technical, factual, and fast-moving position. There is little opportunity to learn the job over six or eight months. An internally groomed candidate comes into the CIO position with a head start due to the person's familiarity with institutional politics and with state requirements/regulations. IT is a service organization with 24 × 7 operations, and the incoming CIO understands the institutional politics and the [internally groomed] person can

begin [almost immediately] to focus on appropriate and necessary changes.” The advantages of identifying a successor, to the person and to the institution, should not be ignored.

Some institutions choose an external candidate over an internal candidate even though the internal candidate has been recognized as being effective in other positions. The internal candidate’s faults are known, while the external candidate is perceived to have fewer faults simply because they are not as well known. There are also institutions that simply need an experienced CIO rather than a first-time CIO. As one CIO said, “Sometimes when you look at your staff, you realize it is time to bring in some new blood from the outside.” In light of conflicting views about promoting internal candidates into the CIO role, there may be benefit in ensuring that aspirants understand the potential necessity—and benefits—of leaving their current institution to become CIO at a different institution.

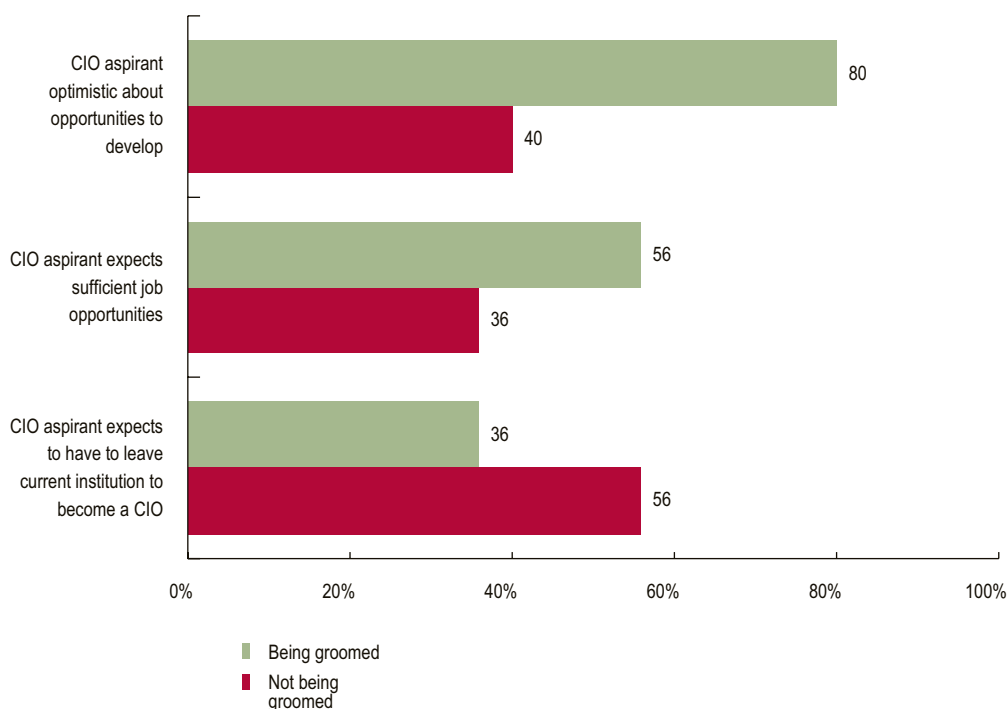
Among CIOs held responsible for identifying their successor, 48% expect their successor to come from within their institution. Of those who were not being held accountable, only 20% agreed that the successor is likely to come from within,⁴¹ although 57% of those CIOs identified a successor anyway.⁴² Based on CIO expectations, if you are in an organization where the CIO is held accountable for finding a successor, your chances of becoming CIO go up by a factor of more than 2 versus organizations where that isn’t a responsibility (48% versus 20%).

Only 31% of CIOs in our survey said that they are held accountable for developing a successor. A recent multi-industry CareerBuilder survey⁴³ found that 69% of companies with more than 1,000 employees have a succession planning program and 48% of VPs at these companies have identified a successor. Comparing these data with those from the ECAR survey seems to indicate that higher education IT leaders are doing the right thing even though it isn’t required, while some corporate executives aren’t doing so even though it *is* required.

Mentoring CIO Aspirants

Mentoring has become an important part of personnel development in general, and mentoring IT leaders is no exception. More than one-third of aspirants (36%) are being groomed by a supervisor, a number that is consistent across Carnegie classification and gender. Those who are being mentored are more optimistic about their future and are more likely to agree that they have sufficient opportunities to develop (80% versus 40%), more likely to agree that there will be sufficient jobs (56% versus 36%), and less likely to believe that they would have to leave their institution to become CIO (36% versus 56%). Given the overall increase in satisfaction with the job as a result of mentoring, it is somewhat surprising that only 36% of those under age 30, and 32% of those 30–45, selected mentoring as one of the top three factors contributing to their professional growth and development (numbers declined significantly after age 45).⁴⁴ Members of the executive IT leadership team should be considering this in promoting mentoring as an important—and high-priority—activity. Figure 11 depicts the impact of mentoring on CIO aspirants.

Figure 11. Beliefs of CIO Aspirants Being Groomed versus Those of Aspirants Not Being Groomed for CIO Role



Formal Leadership Training

Mentoring, however, can go only so far. Formal leadership training, particularly if oriented to IT leadership, can supply background in important skills in a group setting. Additional short courses in specific skills, such as contracts, negotiating, and presentation skills, are also readily available and can be useful as introductions or expansions of knowledge in areas where the prospective CIO is lacking. Texas Wesleyan's Kerr is one CIO who strongly believes in the value of formal leadership programs. IT management position prerequisites include the completion of an EDUCAUSE leadership program and the creation of a three-year technical and leadership skill sets development plan.

The Frye Leadership Institute was established in 2000 through a grant from the Robert W. Woodruff Foundation to help prepare the next generation of higher education leaders in libraries and IT. Working with professionals who are committed to taking their leadership skills to higher levels, Frye instructors structure the curriculum with a goal of building leaders who can inspire, advocate, and implement fundamental collaborative change within their institutions.

The IT Leaders Program of MOR Associates has found wide interest among CIOs and their teams.⁴⁵ Over the past six years, more than 650 aspiring IT leaders from 20 universities have participated in workshops, projects, and individual development programs spanning six to eight months. Penn State has taken this several steps

further, having sent more than 40 people to these programs with other universities, and over 100 more to a tailored program given at their university.⁴⁶ Alumni of the program are more confident in their leadership abilities (97%) and say that others have noticed improvement in their leadership (94%). For example, Penn State Harrisburg campus technology officer John D. Hoh noted that IT leadership program graduates tend to form a web of relationships across the system with their fellow classmates, further expanding and improving their collaborative skills. Other universities are undertaking similar efforts when they have sufficient demand. For example, Stanford University's IT Services has a very successful talent management program for its staff that incorporates a 360-degree employee review process, a nine-block tool for succession planning, cross-training, and leadership development. Mentorship and formal leadership training can improve not only aspirants' readiness but also the effectiveness of the whole IT organization.

CIOs and other IT leaders have sometimes recommended that an employee get an MBA to prepare for the CIO's growing managerial and financial responsibilities. While a full commitment of time to MBA or similar degree programs may not be for everyone, we note that 80% of current CIOs have some type of advanced degree. Also, many schools let employees take courses in their business schools via tuition assistance programs.

In addition to mentoring and classes, interview participants stressed the importance of situational training, whereby staff are given an opportunity to expand their leadership abilities through being in charge of a specific project. Warren J. Wilson, CIO at Black Hills State University, tries to create "microcosms" in the staff member's own area—for example, by delegating responsibility for the technology design and implementation in remodeling an older building or setting up a new building. "It is a piece of the total leadership experience, but the staff member gets a taste or flavor that hopefully he or she can expand to the broader campus."

How Do We Do It?

We know what needs to be done, although it isn't always so easy to do it. Many hints are provided in the 2009 EDUCAUSE Issues Brief "The Evolution of the CIO," which is available at <http://net.educause.edu/ir/library/pdf/PUB9007.pdf>:

- Provide potential leaders with developmental opportunities to gain the necessary background and skills in technical disciplines, and particularly management disciplines.
- Ensure that potential leaders learn about all IT areas.
- Help potential leaders develop the understanding of institutional functions and priorities senior leaders need.
- Encourage potential leaders to access the professional network and leadership development opportunities offered by organizations such as EDUCAUSE.
- Act as mentors and encourage qualified aspirants to pursue the CIO role.

CIOs need to provide development opportunities, and prospective CIOs need to ask for them—and take advantage of them. Especially now, when colleges and universities are faced with both economic realities and the impending retirement of the baby-boom generation, it is important to focus on growing the next generation. After all, that's what higher education is all about.

Conclusion

The ECAR IT leadership and workforce studies provide evidence that considerable turnover among higher education CIOs can be expected during the next six years, both as a result of CIO retirements and for other reasons. The studies also show that while a large number of IT professionals do not aspire to the position of CIO, there are still many candidates who, at least by their own reckoning, will be ready to take on the challenge. Among those who do not aspire to be a CIO, politics and stress are the biggest concerns. In that, they are likely to be correct: The job of CIO goes far beyond the typical concerns of a technologist. Current CIOs know this: They rate communication, strategic thinking, negotiation, salesmanship, and managing relationships as the five most important skills for the position.

Current CIOs need to provide the right opportunities to make sure that the next generation is prepared for the job. With coordinated programs of mentoring and more formal leadership development, candidates can develop the many skills beyond the technical skills that are required to make a good CIO. As a community, we need to be watchful of why so many people are not interested in the position and make sure we have qualified candidates as the baby boomers start to retire. CIOs and other higher education executives need to think strategically to be sure our next generation of CIOs is ready to take on the challenges of the coming decades.

Endnotes

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2. Philip J. Goldstein, *Leading the IT Workforce in Higher Education* (Research Study) (Boulder, CO: EDUCAUSE Center for Applied Research, 2008), available from <http://www.educause.edu/ecar>; and Richard N. Katz, Robert B. Kvakik, James I. Penrod, Judith A. Pirani, Mark R. Nelson, and Gail Salaway, *Information Technology Leadership in Higher Education: The Condition of the Community* (Research Study) (Boulder, CO: EDUCAUSE Center for Applied Research, 2004), available from <http://www.educause.edu/ecar>.
3. Resources for the 2011 EDUCAUSE Current Issues Survey, <http://www.educause.edu/2011IssuesResources>. See also the report from the survey: Bret L. Ingerman, Catherine Yang, and 2011 EDUCAUSE Current Issues Committee, "Top-Ten IT Issues, 2011," *EDUCAUSE Review* 46, no. 3 (May/June 2011), <http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume46/TopTenITIssues2011/228654>.
4. EDUCAUSE, "The Evolution of the CIO: An EDUCAUSE Issues Brief" (Boulder, CO: EDUCAUSE, October 2009), <http://net.educause.edu/ir/library/pdf/PUB9007.pdf>.
5. Brian Hawkins, "A Framework for the CIO Position," *EDUCAUSE Review* 39, no. 6 (November/December 2004), <http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume39/AFrameworkfortheCIOPosition/157942>.
6. See, for example, Hawkins, "A Framework for the CIO Position"; David Farrar, "Redefining IT Leadership—A Provost's Perspective," *EDUCAUSE Review* 45, no. 2 (March/April 2010); and Gregory Jackson, "Leading an IT Organization Out of Control," *EDUCAUSE Review* 46, no. 4 (July/August 2011), and his blog posts on "Reflections on CIOship" at <http://gjackson.us/ruminations/>.

7. Meredith L. Weiss, "Technology Leadership: Today's Higher Education CIO" (Research Bulletin) (Boulder, CO: EDUCAUSE Center for Applied Research, 2011), 4, available from <http://www.educause.edu/ecar>.
8. Ibid., 12.
9. The CDS summary report used the basic classification system from the 2000 version of *The Carnegie Classification of Higher Education*. See Appendix D of the 2009 summary for more details on how the CDS uses this classification.
 - DR EXT (Doctoral Institutions/Extensive): 50 or more doctoral degrees per year across at least 15 disciplines
 - DR INT (Doctoral Institutions/Intensive): 10 or more doctoral degrees per year across three or more disciplines or at least 20 doctoral degrees per year overall
 - MA I (Master's Institutions I): 40 or more master's degrees per year across three or more disciplines
 - MA II (Master's Institutions II): 20 or more master's degrees per year
 - BA LA (Baccalaureate Colleges Liberal Arts): At least half of baccalaureate degrees in liberal arts fields
 - BA GEN (Baccalaureate Colleges General): Fewer than half of baccalaureate degrees in liberal arts fields
 - AA (Associate's Colleges): Offer associate's degrees, but typically no baccalaureate degrees
 - Other US: Carnegie classifications include ART, BA AA, BUS, ENGR, FAITH, HEALTH, LAW, MED, OTHER, TRIBAL
10. IBM Institute for Business Value, "The Essential CIO," 2011, <http://www.ibm.com/theessentialcio>.
11. Interested CIOs can assess their own mandate by taking the 2011 IBM Global CIO Study Self-Assessment at <http://ibmciostudyassessment.com/>.
12. Katz et al., *Information Technology Leadership in Higher Education*, 10, 15.
13. Hawkins, "A Framework for the CIO Position."
14. Council membership is also associated with Carnegie classification. However, after accounting for CIO title, class appears to have no further association with council membership.
15. Cabinet membership is strongly associated with participation in decisions with IT implications ($p < 0.0001$, Cramer's $V = 0.3681$), on administrative directions ($p < 0.0001$, Cramer's $V = 0.2664$), and on academic directions ($p < 0.0001$, Cramer's $V = 0.2700$). These percentages show no significant differences from the 2008 study or across Carnegie classification.
16. EDUCAUSE, "The Evolution of the CIO," 6.
17. Carnegie classification and title used are strongly associated: $p < 0.0001$, Cramer's $V = 0.2365$.
18. This category represents the "administrative side of the house" and is the sum of two choices from the survey, highest-ranking administrative officer (23%) and highest-ranking business officer (11%).
19. EDUCAUSE, Core Data Service, 2009 data, <http://www.educause.edu/coredata>.
20. EDUCAUSE, "Core Data Service 2003 Summary Report," <http://www.educause.edu/coredata/reports/2003>.
21. Hawkins, "A Framework for the CIO Position."
22. Debra Hust Allison, "The Future CIO: Critical Skills and Competencies" (Research Bulletin) (Boulder CO: EDUCAUSE Center for Applied Research, 2010), 8, <http://net.educause.edu/ir/library/pdf/ERB1015.pdf>.
23. Weiss, "Technology Leadership," 6.
24. Philip J. Goldstein and Judith A. Pirani, "Views of the Top: Rising IT Leaders Discuss the CIO Position in Higher Education" (Case Study) (Boulder, CO: EDUCAUSE Center for Applied Research, 2008), <http://net.educause.edu/ir/library/pdf/ers0807/cs/ECS0805.pdf>.
25. Allison, "The Future CIO."
26. EDUCAUSE, "The Evolution of the CIO," 5.
27. IBM, "The New Voice of the CIO," 2009, http://www-304.ibm.com/businesscenter/cpe/download0/183490/MM_CIO_Study.pdf.
28. EDUCAUSE 2011 Current Issues Survey Resources (see demographic survey response tables), available from <http://www.educause.edu/2011IssuesResources>.
29. Bureau of Labor Statistics, "Employed Persons by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity," 2010, <ftp://ftp.bls.gov/pub/special.requests/lf/aat11.txt>.
30. Carnegie class and CIO's degree are strongly associated: $p = 0.0006$, Cramer's $V = 0.1787$.
31. Wayne A. Brown, *2010 Study of the Higher Education Chief Information Officer Roles and Effectiveness*, ed. Teresa C. Brown (Center for Higher Education Chief Information Officer Studies, 2010), 11, <http://www.CHECS.org>.
32. Ibid., 24.
33. For example, Brown, *2010 Study of the Higher Education Chief Information Officer*, 45–46.
34. Rich Morin, *Most Middle-Aged Adults Are Rethinking Retirement Plans* (Washington, DC, Pew Research Center, May 28, 2009), <http://pewresearch.org/pubs/1234/the-threshold-generation>.
35. The margin of error for the difference between either pair of proportions (58% versus 46% or 13% versus 7%) is 12%–15%. Thus, the observed trends do not rise to the usual level of statistical significance (0.05 or 0.01).
36. Katz et al., *Information Technology Leadership*, 61; and Brown, *2010 Study of the Higher Education Chief Information Officer*, 45–46.

37. Catherine P. Montaldo et al., "Determinants of Planned Retirement Age," *Financial Services Review* 9 (2000).
38. EDUCAUSE Center for Applied Research, "IT Workforce and Leadership in Higher Education, 2010 Survey Questionnaire" (Survey Instrument) (Boulder, CO: EDUCAUSE Center for Applied Research, 2010), available from <http://www.educause.edu/ecar>.
39. The questionnaire used for the 2004 ECAR study did not ask a comparable question about executive IT position.
40. H. David Lambert, "The Changing Role of the CIO" (presentation at the EDUCAUSE Annual Conference, Denver, CO, November 2009), available from <http://www.educause.edu/Resources/EDUCAUSE2009FaceToFaceConferen/TheChangingRoleoftheCIOsponsor/175759>.
41. Being held accountable and expecting a successor from within are strongly associated: $p < 0.0001$, Cramer's $V = 0.2894$.
42. This is significantly higher than the 44% from the same subgroup in 2008; $p = 0.0004$, Cramer's $V = 0.1543$.
43. CareerBuilder.com, "Nearly One-Third of Companies Don't Have Succession Planning, Reveals New CareerBuilder Survey," May 24, 2011, http://www.careerbuilder.com/share/aboutus/pressreleasesdetail.aspx?id=pr639&sd=5%2f24%2f2011&ed=12%2f31%2f2011&siteid=cbpr&sc_cmp1=cb_pr639.
44. Selection of mentoring as one of the top-three factors contributing to their professional growth and development declines significantly after age 45, $p < 0.0001$, Cramer's $V = 0.1767$.
45. MOR Associates, "IT Leaders Program," <http://www.morassociates.com/itlp.htm>.
46. Robin Anderson, "Penn State: Building a Community of IT Leaders," 2009, <http://www.cic.net/Libraries/Technology/ITLP-PSUArticle.sflb.ashx>.

Appendix A: Methodology

The 2011 study of the information technology (IT) workforce and leadership in higher education from the EDUCAUSE Center for Applied Research (ECAR) gathered quantitative and qualitative data from 3,400 IT professionals at 1,053 institutions of higher education. Twenty-four follow-up phone interviews with CIO respondents focused on four areas of inquiry: changes in reporting structure, addition of functions to central IT, succession planning, and leadership style.¹

In a departure from the ECAR IT leadership and workforce studies of 2004 and 2008, the research methodology also included analyses of data collected from the past five years of the EDUCAUSE Core Data Service (CDS)² and the EDUCAUSE Current Issues Survey.³ Since 2002, the CDS has tracked data on college and university central IT organizations and IT leaders, with more than 900 institutions completing the survey each year. The EDUCAUSE Current Issues Survey has been measuring member opinions about important IT issues since 2000.

Overview of Survey Respondents

The majority of individuals who responded to the ECAR survey⁴ were male (60.8%) and Caucasian (86.1%). About half of the respondents (49.0%) were from doctoral institutions. The largest portion of respondents held positions in central IT. See Table 1 for more detailed demographics of the respondents.

The overall response rate was approximately 12%. The rate was slightly lower among invitees at associate's institutions (10%) and slightly higher among invitees at liberal arts colleges (15%). Other demographics (e.g., age, ethnicity, gender) are not available in the EDUCAUSE member database, which is the source of the population frame. Thus, response rates cannot be calculated for those subgroups of the population. No adjustment for nonresponse has been applied in the analyses presented in the report.

Analysis and Reporting

In ECAR studies, analyses often compare respondents by the 2000 Carnegie Classification⁵ of the institution where they were employed at the time of the survey. The Carnegie Foundation has introduced new classification schemes since 2000. However, to compare results with previous studies, we continue to use the 2000 taxonomy.

Analyses were conducted to compare CIO respondents with aspirants and non-aspirants. Where appropriate, comparisons to data from previous studies are considered. Statistical significance is noted for many results, with p-values, effect sizes, and/or margins of error. The presence of statistical significance is considered conclusive in

Table 1. Demographics of Respondents to the ECAR IT Workforce and Leadership in Higher Education, 2010 Survey Questionnaire

		CIO	Non-Aspirant	Aspirant	Did Not Answer	Total
Gender	Male	282	985	410	392	2,069
	Female	82	822	128	220	1,252
	Did not provide	4	52	7	16	79
	Total	368	1,859	545	628	3,400
Ethnicity	American Indian/Alaska Native	1	9	2	2	14
	Asian American/Asian/Pacific Islander	9	43	24	20	96
	African American/Black	3	24	11	18	56
	Hispanic/Latino	2	43	22	26	93
	White/Caucasian	338	1,624	455	512	2,929
	Other	6	27	11	14	58
	Did not provide	9	89	20	36	154
	Total	368	1,859	545	628	3,400
Carnegie Class	DR	73	1,023	263	307	1,666
	MA	101	322	110	131	664
	BA	69	171	65	77	382
	AA	51	100	33	38	222
	Other US	72	240	72	73	457
	Outside US	2	3	2	2	9
	Total	368	1,859	545	628	3,400

demonstrating, for example, association between responses to two questions. However, a statistically significant relationship does not imply a causal relationship. In some cases, a lack of statistical significance is noted, indicating a lack of conclusive evidence.

Endnotes

1. Leadership style is determined using a validated instrument found at Mind Garden (www.mindgarden.com), 1992, B. M. Bass and B. J. Avolio.
2. EDUCAUSE Core Data Service for IT benchmarking (Boulder, CO: EDUCAUSE), <http://www.educause.edu/coredata>.
3. Annual surveys of the EDUCAUSE Current Issues Committee, 2006–2011, <http://www.educause.edu/issues>.
4. EDUCAUSE Center for Applied Research, "IT Workforce and Leadership in Higher Education, 2010 Survey Questionnaire" (Survey Instrument) (Boulder, CO: EDUCAUSE Center for Applied Research, 2010), available from <http://www.educause.edu/ecar>.
5. Carnegie Foundation for the Advancement of Teaching, 2000, <http://classifications.carnegiefoundation.org/resources/>.

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