EDUCAUSE

CORE DATA SERVICE

2002 Summary Report

Brian L. Hawkins, Julia A. Rudy, and Joshua W. Madsen

EDUCAUSE is a nonprofit association whose mission is to advance higher education by promoting the intelligent use of information technology. Membership is open to institutions of higher education, corporations serving the higher education information technology market, and other related associations and organizations. Resources include professional development activities; print and electronic publications, including books, monographs, and the magazines *EDUCAUSE Quarterly* and *EDUCAUSE Review*; strategic policy advocacy; teaching and learning initiatives; applied research; special interest collaboration communities; awards for leadership and exemplary practices; and extensive online information services. The current membership comprises nearly 1,900 colleges, universities, and education organizations, including 200 corporations. EDUCAUSE has offices in Boulder, Colorado, and Washington, D.C.; www.educause.edu, e-mail info@educause.edu.

Art direction by Joseph Daigle, Studio Productions

EDUCAUSE Core Data Service

2002 Summary Report

Brian L. Hawkins, Julia A. Rudy, and Joshua W. Madsen

TABLE OF CONTENTS

Acknowledgments

The EDUCAUSE Core Data Service (CDS) would not have been possible without the efforts of many individuals, whom we would like to acknowledge and thank here.

First, EDUCAUSE and the community it serves are extremely grateful for the leadership of the members of the EDUCAUSE Research Task Force who advanced the service from concept to reality. These information technology leaders from a dozen member campuses contributed their vision, expertise, and wisdom in addressing the myriad issues that arose as the service was imagined and thought through.

Next, we thank the 636 colleges and universities that completed and submitted the core data survey. Without their leap of faith in supporting this new, unproven activity, the Core Data Service and this monograph would not exist. We appreciate the time and effort these campuses expended in completing the survey and trust that they are reaping a satisfactory reward in authorized access to the powerful interactive database service component of the CDS.

The Core Data Service would also not exist were it not for the work of the imaginative and proficient group of IT professionals on the EDUCAUSE staff who developed the Web-based applications for both the core data survey and the interactive database service. The latter includes innovative tools that enable complex data comparisons by a number of demographic factors and provide statistical analyses such as means and medians on the fly for selected populations. This group of innovators includes Becky Granger, Rob La Favor, Randy Richter, and Justin Trout. EDUCAUSE is indebted to them for making all of these important tools possible.

Finally, despite the many help features and the availability of the Core Data Service tutorial, individual staff support was still required to help participants. The EDUCAUSE Member Services team of Jan Brescia, Tammy Burkhart, Linda Kelley, Kate McTurk, and Wendy Milburn did an admirable job of fielding and referring questions, technical issues, and other problems.

Introduction

Higher education is experiencing unprecedented pressure for accountability from both internal and external constituencies, from trustees to campus administration to prospective students and their parents to governmental agencies. In recent years, these accountability demands "have been especially targeted at information technology, putting strong pressures on IT leaders to explain and justify the costs and benefits of the expenses associated with their areas."[1] Fundamental to such efforts is having reliable data about information technology practices, structures, and expenditures at comparable institutions for benchmarking purposes.

Historical Context

Finding such useful and relevant comparative data for IT units in higher education has long been a challenge, and a number of data collection activities have arisen through the years to meet this need. Prior to its consolidation with Educom in the summer of 1998,[2] CAUSE had been capturing data from its members for nearly 20 years. Early surveys collected data primarily on administrative systems, as the CAUSE mission had not yet broadened to encompass academic computing. Academic computing data were captured in a survey done annually by Charles Warlick of The University of Texas at Austin. Between these two surveys, the IT community had access to some fundamental data about academic and administrative hardware and software. Warlick's data were published regularly in a print compendium, while summary CAUSE data were published periodically in monograph format.

In addition, the CAUSE data were used to form the basis of an Institution Database (ID) service through which members could request custom reports drawn from the data in six major areas: staffing, budgets, organization, software, computer hardware, and communications. This service was quite popular with members, peaking at 442 custom reports requested in FY1994–1995 and declining in 1996 after CAUSE stopped collecting data.

The CAUSE ID survey instrument changed over the years as the association's mission changed, and especially after Warlick ceased to do his survey about a decade ago. Several years earlier, Kenneth C. Green had already begun to disseminate and report the findings of a comprehensive academic computing survey (called the Campus Computing Project) that focused on the microcomputer environment on campuses throughout the country, a survey that has continued to the present (see http://www.campuscomputing.net). In addition, several years ago David Smallen and Karen Leach (chief information officer and chief financial officer, respectively, at Hamilton College) partnered to begin a new data collection activity, called the COSTS Project, focused on identifying and capturing the cost of supporting technnology services on campus (see http://www.costsproject.org). This activity for the most part has attracted the participation of small, liberal arts institutions, but institutions in other Carnegie classes also increasingly participate.

A Role for EDUCAUSE

Following the merger of CAUSE and Educom, EDUCAUSE developed a number of strategies for delivering a research program to capture and share the data and information members need to plan for and manage IT on their campuses. First, an EDUCAUSE Current Issues Survey was launched in 2000 and has been conducted annually since then (see http://www.educause.edu/issues). Then, in 2001, the EDUCAUSE Center for Applied Research (ECAR) was created to respond to members' increasing requests for applied research and analysis to help campus leaders inform and reinforce their IT-related decisions (see http://www.educause.edu/ecar).

Finally, a task force was convened in the fall of 2001 to consider establishing an ongoing core data collection activity similar to the ear-

lier CAUSE ID survey and service. Members of this task force (see the sidebar), who were representative of the diversity of the EDUCAUSE membership, were chosen for their interest and/or expertise in benchmarking, assessment, and data collection and analysis. The group recommended that the association develop a Core Data Service (CDS) that would disseminate a survey to collect data about information technology environments and practices on member campuses. The goal was to develop (1) a new, Web-based, interactive database service available to all who complete the survey through which they can access data contributed by their peers to help benchmark, plan, and make decisions about IT on their campus; and (2) an annual summary report about campus IT environments based on data contributed through the survey.

This initiative would not duplicate but rather cooperate with existing IT-related data collection efforts and explore opportunities to partner with other associations in such efforts. Task force members worked with EDUCAUSE staff mem-

EDUCAUSE Research Task Force Members

EDUCAUSE appreciates the efforts of the following individuals, who provided advice throughout the planning and developmental stages in the creation of the Core Data Service and who continue their work in a policy advisory role.

Jack Duwe
Deputy CIO
University of Wisconsin–Madison

John Gregory
Executive Director, Information Technologies
University of Maine

Brian Hawkins
EDUCAUSE President

Darrel Huish
Assistant Vice Provost, Information Technology
Arizona State University

Gregory Jackson
Vice President and CIO
University of Chicago

Lucinda Lea
Vice President for Information Technology and CIO
Middle Tennessee State University

Betty Leydon
Vice President for Information Technology and CIO
Princeton University

Martin Ringle
Chief Technology Officer
Reed College

Kevin Shalla
Associate Director of IT, Office of Admissions and Records
University of Illinois at Chicago

Scott Siddall
Assistant Provost for Instructional Resources and Director of Instructional Technology
Denison University

David Smallen
Vice President, Information Technology
Hamilton College

Donald Spicer
Associate Vice Chancellor for Information Technology and CIO
University System of Maryland

Ann Strine
Vice Chancellor for Information Technology
Pima County Community College District

bers to develop the direction and policies guiding the Core Data Service, and they continue to provide advice and counsel in this regard.

CDS Philosophy and Policy

In the process of developing an underlying philosophy and policy for the new service, it became necessary to define how the data would ultimately be presented to participants. It was the consensus of the task force members that instead of presenting information in the traditional and "safe" aggregated data form, we would ask participants to submit their survey responses in a way that the data available through the interactive service would be identifiable by institution.

The task force believed that the value of being able to select a specific comparison group of similar, peer institutions would outweigh any reluctance to disclose identifiable data. Ultimately, it would be up to the community to decide if they shared this value proposition. The overwhelming number of schools that participated in this launch of the CDS (see Appendix A for a list of the 636 institutions that completed and submitted a survey as of the publication of this monograph) gives voice to that shared vision. Although no individual salary data or other sensitive information were sought, the willingness of the community to share what until now has been largely nondisclosed financial and other information has allowed this service to approach the status of a breakthrough application.

A second major criterion the task force established was that access to the service would be restricted to those who had accepted the potential risk (and the time and effort) to share their identifiable data. Only those campuses that completed and submitted the survey would be eligible to log in to the interactive database site; nonparticipants would not have access.

Because of the identifiable nature of the data, it was also clear that the service and data could be misused if corporations with products to market to higher education had access. Since such vendors could not submit data, their access was restricted by definition. However, since this project is underwritten by EDUCAUSE, we feel an obligation to provide some overall data analysis to those campuses that did not participate this year, as well as to the vendor community, who are also valuable association members. For this reason, this monograph was created for distribution on a complimentary basis to the entire EDUCAUSE membership.[3]

Developing and Implementing the CDS

Throughout 2002, task force members and staff worked to define various survey questions, test their appropriateness for different types of institutions, and set limits on what information would be sought. After an initial questionnaire was developed, EDUCAUSE was again able to draw upon the membership—nine individuals from demographically different institutions—to beta-test the instrument. The instrument was then modified to meet the aforementioned criteria.

As the instrument was being refined, a second parallel process was begun. From its inception this effort was designed as a *service*, not just another survey. It was hoped that a comprehensive set of tools could be developed to allow service users to analyze the data captured into the database in ways that would allow them to plan, to compare, and to better understand the IT environments of schools they considered their peers (whether competitors or aspirants).

The EDUCAUSE information technology staff, working closely with the first two authors of this monograph, developed filters, sorting tools, graphing tools, and other features to make the interactive database service as useful and valuable as possible to participants. When an initial set of tools was complete, the beta-testers from the first phase once again agreed to test the database service application, providing us with feedback on features that didn't work, challenges with different browsers, and so forth. This feedback was immensely useful in enabling us to launch a near-faultless interactive database service on May 27, 2003.

Appropriate Use of the Data

Prior to the launch of the interactive database service, all participants were reminded

through both print and electronic communications that their data were about to become viewable to authorized users of the database. The messages also informed participants of the terms and conditions of use, which included the following statements:

- Access to the database service will be restricted to participating campuses, that is, those that have completed the survey, and further restricted to individuals on those campuses who have been authorized by their campus to use the database.

- Access will be provided through an EDUCAUSE username and password that has been issued to authenticated individuals who will be recognized by the Core Data Service system as having the authorization to access the database.

- EDUCAUSE has established a strong copyright and appropriate use policy (see http://www.educause.edu/coredata/use_policy.asp) expressly to protect the information of participating institutions. Anyone authorized to access the database will need to "click through" and agree to all of the terms and conditions of use before gaining that access.

- Any campus found in violation of the terms and conditions of use will be penalized by loss of participation privileges in the Core Data Service, and EDUCAUSE may take legal action against any party who accesses or uses database content or data without authorization.

- Authorization to access the database service will not be available to the public, corporations, researchers, agencies, associations, or the media.

Finally, a note about the trust relationships and partnership we enjoy with our corporate members: While we decided to restrict use of the actual data to campuses that completed the survey, thus de facto precluding vendor participation, some of those who completed the survey were in fact employees or contractors with corporations that had facilities management contracts with a number of campuses. We contacted those companies about this dilemma and proposed a solution, which Blackwell Consulting Services, CampusWorks, Collegis, and SCT graciously agreed to. All four of these corporations agreed in writing not to seek access to the service or survey data, realizing that it was strictly for campus consumption for planning and institutional analysis. Further, they agreed that if any data did come into their hands, they would not use it. It is this level of true partnership that we in higher education are fortunate to enjoy with our corporate community.

CDS Methodology

All EDUCAUSE member campuses that have an IPEDS[4] unit ID number, as well as international member institutions (which do not have such numbers), were invited to complete the core data survey through an e-mail message sent to the primary representative at each member campus in December 2002. We also invited schools that were not members of EDUCAUSE to participate in the Core Data Service if they were members of affinity groups such as the Consortium of Liberal Arts Colleges (CLAC), the Council of Independent Colleges (CIC), and the National Institute for Technology and Liberal Education (NITLE). More than 1,900 campuses were invited to participate in the survey.

In the case of an institution with a Carnegie classification of "system," individual member campuses within the system were invited to complete the survey, provided they had an IPEDS unit ID number. A multicampus system with a single unit ID was invited to complete the survey as a single institution. System or district offices (except those that had a single unit ID) were not eligible to complete the survey; however, if 40% of the campuses within the system or district completed the survey, the system/district office would be eligible to access the interactive database service.

Access to the survey was provided through an authorization system that gave such access ini-

tially to the individual who was designated as the primary or key representative in the EDUCAUSE records database at that time. That individual was invited to manage the completion of the survey on his or her campus or to designate another individual or individuals to do so.

All data captured by the core data survey were submitted electronically. (See Appendix B for a copy of the survey.) Existing EDUCAUSE information systems enabled automatically matching respondents with their corresponding IPEDS data, so these elements did not have to be entered by the respondent. Based on data reported by U.S. colleges and universities through IPEDS for 2001, the number of FTE faculty, number of FTE students, gross general institutional expenditures, and type of institutional control (public or private) were matched, as was the 2000 Carnegie classification for each institution. All financial data sought through the core data survey were for the fiscal year 2001–2002, so actual rather than projected budgets were captured.

Embedded throughout the Web-based survey were a variety of pop-up and linked help notices, electronic navigation to a glossary of terms and definitions, and other aids to clarify intent and to obtain consistent responses and definitions. A copy of the glossary appears in Appendix C of this monograph.

The Web-based survey was designed to be easy to use. The approximately 50 questions, distributed over five sections of the survey, did not have to be answered in one sitting, as respondents could enter data, save them, and return to the site at another time to enter more data or change data already entered. Once a campus submitted its survey, data could not be changed except by special request in the case of incorrect data having been submitted.

With information derived from running several initial analyses of the data, we identified data that fell outside the range of what might be expected for responses to several of the questions. Surveys that included such data were removed from the database until we could communicate with the member representative who completed the survey to clear the questionable data, after which the survey was reviewed and resubmitted into the database. This data integrity checking process continued over a period of several weeks, with a final snapshot of data for 621 institutions taken on July 28, 2003, for the analyses included in this monograph.[5]

We decided to report data for this monograph by Carnegie class, combining like Carnegie categories for ease of reporting and for manageable data presentation in the tables. In doing this, we ensured that by combining groups we did not lose important distinctions. Appropriate statistical tests were conducted with a large number of variables in the data to determine if consistent and meaningful differences existed between like categories. Within the Carnegie categories, tests were run to determine if such categories could be combined. In all these sets of analyses, no significant patterns were identified when the size differences in the schools were controlled for. This was also the case when controlling for public versus private control.

Thus, throughout this monograph—with a very few exceptions—the data displays focus on the following combined categories: BA, which combines Baccalaureate Colleges-Liberal Arts, Baccalaureate Colleges-General, and Baccalaureate-Associate's Colleges; MA, which combines Master's Colleges and Universities I and Master's Colleges and Universities II; DR, which combines Doctoral/Research Universities-Extensive and Doctoral/Research Universities-Intensive; and AA, which includes all schools with a classification of Associate's Colleges (community colleges, technical colleges, junior colleges, and other colleges that grant associate's degrees). Definitions of these official Carnegie classifications are included in Appendix D. Our category of "other" includes Tribal Colleges and schools in the Specialized Institutions Carnegie class (such as law schools, health-related institutions, art schools, and so forth), as well as participating international institutions, which do not have Carnegie classes assigned because that is a uniquely U.S. schema.

Keep in mind that the interactive database service component of the CDS allows for view-

ing data in a much more refined way (for example, by size, location, control, specific Carnegie classification), including setting up a customized peer group of as few or as many comparable institutions as the user defines. The purpose of this monograph is to provide aggregate data in simple form for those who do not have access to the service itself; in our analyses we have not tried to provide every possible cut on the data, but rather some summary data that we believe will be useful to the public.

The Fallacy of Relying Only on Input Measures

We began this introduction by proposing that the collection of IT-related data is important to help campuses plan more effectively by virtue of having access to information about IT infrastructure, funding, and management practices of schools similar to theirs. But the problem with IT benchmarks of any kind—and the Core Data Service may be no exception—is that these input comparisons are too often used to convince decision makers to keep pace with their peers and that more is better where technology is concerned.

This effort to "keep up with the Joneses" is ultimately an inflationary pressure that can be dysfunctional, acting as a negative driver. Such pressure and focus on input measures is a fallacy that higher education is finally beginning to recognize. Rather than engaging in an "arms race," we need to focus on effectiveness—trying to determine which institutions seem to be doing the best job with the fewest resources, with an eye toward understanding the environment and practices that make this possible. Hawkins and Barone made the case for a new kind of assessment model that not only uses input measures but recognizes the even greater importance of evaluating outcomes in higher education:

> Although … efforts [using input measures] may have leveraged additional funds (appropriately or not), they do not include measures that offer insight into how technology is enabling new and better research, whether or how technology is enhancing teaching and learning, or whether administrative functions are easier for students to access or less expensive to operate. The problem is that in order to effectively measure the success and/or value of an IT investment, we must come to grips with evaluating these functional outcomes of the college or university. However, we have thus far successfully avoided grappling with these difficult challenges of assessing learning outcomes, administrative efficiency, effectiveness, and so on. Without working in tandem with others on campus to identify and evaluate these outcomes and then to understand and describe the enabling role of IT in facilitating these accomplishments (or the failure thereof), we will never be able to reasonably and meaningfully assess the return on IT investment.[6]

Some might suggest that the EDUCAUSE Core Data Service may contribute to the fallacy of overvaluing input measures, but we would counter such an allegation on several fronts:

- First, this kind of application was in very high demand by our members for a host of reasons, among them being able to understand where the market really is and what other campuses are actually doing, in order potentially to *reduce* the pressures on growth and expansion.

- Second, even if legitimate outcome measures *were* available, we would still require input measures to understand the effectiveness equation. Efforts such as the Core Data Service are necessary, but not sufficient, to achieve the ultimate goal of defining standards of optimal achievement of goals.

- Third, the CDS has the potential to dispel the myths surrounding IT funding and investment by presenting detailed data that present a more accurate and reliable picture of campus IT environments.

- Fourth, the service is providing a useful network to help participants find and communicate with colleagues like themselves, who have similar systems and characteristics and who are facing similar challenges, and to learn from them.

- Fifth, the Core Data Service has the potential to promote more congruity in campus IT funding models, provide models for IT organization and support, identify exemplary processes for allocating and expending resources (both human and financial), and overall promote more effective IT management through prompting more widespread tracking of IT expenditures (whether these occur internally or externally to the central IT unit) at higher education institutions.

We believe that the Core Data Service also has the potential to create a different sociometry for the IT community, replacing the casual inquiry to a listserv for information with a more informed method of obtaining comparative data. All too frequently a concerned member will post a query on the CIO listserv asking, for example, "Who out there has or is considering having the library report to the CIO?" A few folks respond, but the results are serendipitous and incomplete, based on who happens to be reading the listserv at the time, whether or not the respondents are from similar types of institutions, and so forth. That is but one question the CDS can answer, filtering responses based on criteria such as Carnegie class, FTE enrollment, public versus private control, and even institutional budget, until a short list of the most appropriate schools for comparison appears. Clicking on any school on the list will link to the EDUCAUSE member directory, where all of the representatives to EDUCAUSE for that campus are listed, including contact information. This facilitation of communication between and among members of the community, based on information about areas of common interest or challenges, has from the beginning been a key objective of the EDUCAUSE Core Data Service.

As illustrated by the excerpt from Hawkins and Barone, there is a clear and pressing need for higher education to focus on outcome goals, and EDUCAUSE has both been advocating in this arena and partnering with other higher education organizations to advance this agenda. We fully recognize that our Core Data Service is not the endgame, but it is an important part of the total picture. It is our hope that eventually our service will be part of the analysis in determining the most efficient methods and effective practices for achieving important output objectives and goals.

Notes

1. B. L. Hawkins and C. A. Barone, "Assessing Information Technology: Changing the Conceptual Framework," in *Organizing and Managing Information Resources on Your Campus,* P. A. McClure, ed. (San Francisco: Jossey-Bass, 2003), pp. 129–145.
2. CAUSE, the Association for the Management of Information Technology in Higher Education, was founded in 1971 as a nonprofit association for colleges and universities, with an initial focus on administrative computing. Educom was a nonprofit consortium of higher education institutions whose mission was to facilitate the introduction, use, access to, and management of information resources in teaching, learning, scholarship, and research. The two organizations merged in 1998 to form EDUCAUSE, whose mission is to advance higher education by promoting the intelligent use of information technology.
3. Primary representatives of EDUCAUSE member organizations receive a single complimentary copy of the monograph, which is available for free download in PDF form on the Web at http://www.educause.edu/coredata/reports/2002/. Additional print copies are available for $10 each.
4. The Integrated Postsecondary Education Data System (IPEDS) is a single, comprehensive data collection program designed to capture data for the National Center for Education Statistics (NCES) for all institutions and educational organizations whose primary purpose is to provide postsecondary education. IPEDS collects institution-level data in such areas as enrollments, program completions, faculty, staff, and finances.
5. The first two authors of this manuscript would like especially to acknowledge the invaluable statistical analyses that were conducted by our co-author, Joshua Madsen. These analyses added rigor and understanding to the interpretation of these data.
6. Hawkins and Barone, op. cit., p. 133.

ONE

IT Organization, Staffing, and Planning

The first section of the core data survey included questions that can be clustered into three areas: campus information technology (IT) leadership and organization, IT staffing, and IT strategic planning.

IT Leadership and Organization

Survey responses for the title of the highest ranking technology administrator beg the question, "What's in a name?" They are anything but consistent or predictable! Of the 621 institutions whose data were included in our "snapshot," 275 unique titles were reported, representing nearly every combination of level (vice president, assistant/associate vice president, dean, director, and others) and area descriptor (information systems/services/technology, and others). These various combinations and permutations often included an addendum such as "and CIO" or "and CTO." The most common unique title was in fact CIO (chief information officer), which was included in the title of 27.6% of all responses.

Table 1-1 shows percentages of the various titles[1] by Carnegie classification,[2] to allow for easy comparison across segments of the higher education community. As shown in the table, the vice president title is most common in research universities (DR), while director is the dominant title in liberal arts colleges (BA), comprehensive universities (MA), and associate's colleges (AA). The title of CIO is used significantly in all of the categories.

These highest ranking IT administrators not only have a variety of titles, they also have a variety of reporting relationships within their respective organizational structures. Table 1-2 shows the percentage of top IT leaders report-

Table 1-1
Percentage of Title of Highest Ranking IT Administrator

	All	DR	MA	BA	AA	Other
VP, Vice Chancellor, ...	19.8%	41.8%	16.0%	12.8%	16.9%	8.3%
CIO	19.6%	23.9%	26.6%	11.3%	12.4%	19.8%
CTO	2.7%	1.5%	3.6%	6.0%	1.1%	0.0%
Assistant/Associate VP, ...	14.0%	18.7%	16.0%	10.5%	14.6%	8.3%
Director, Dean, Executive Director	40.6%	14.2%	37.9%	57.1%	46.1%	54.2%
Assistant/Associate Director or Dean	0.6%	0.0%	0.0%	0.8%	3.4%	0.0%
Head, Manager, Other	2.6%	0.0%	0.0%	1.5%	5.6%	9.4%

Table 1-2
Percentage of Top IT Administrators Reporting to Various Organizational Roles

	All	DR	MA	BA	AA	Other
Chancellor/President/ CEO	27.1%	26.1%	28.4%	23.3%	33.7%	25.0%
Highest Academic Officer	30.8%	38.1%	32.0%	36.8%	22.5%	17.7%
Highest Administrative Officer	24.0%	17.9%	20.7%	18.8%	31.5%	38.5%
Highest Business Officer	10.6%	4.5%	11.8%	17.3%	6.7%	11.5%
Second Level Academic	1.3%	1.5%	1.2%	1.5%	1.1%	1.0%
Second Level Administrator	0.5%	0.1%	0.0%	0.0%	0.0%	2.1%
Other	5.8%	11.2%	5.9%	2.3%	4.5%	4.2%

Table 1-3
Percentage of Top IT Administrators Who Are Members of the President's or Chancellor's Cabinet

	All	DR	MA	BA	AA	Other
Yes	43.6%	49.3%	43.8%	33.1%	57.3%	37.5%
No	56.4%	50.7%	56.2%	66.9%	42.7%	62.5%

ing to various officials on their campuses, once again broken out by Carnegie class. The differences in reporting relationships indicate substantially different patterns among Carnegie groups. The percentage of IT leaders reporting directly to the president is approximately equal for all groups, and appears to represent an increase compared to data collected by Latimer in a comparable manner in 1998.[3]

It is notable that while nearly 42% of the top IT administrators at doctoral institutions carry the title vice president, vice chancellor, or something equivalent, only about 26% report to the president or chancellor. It is likely that their title reflects a level of significance and seniority with the executive leadership team, and not necessarily a structural reporting relationship or an indication of who conducts this person's performance appraisal.

An unusually high percentage of respondents marked the "other" functional area, especially those from doctoral institutions. In a few cases, this reflected the top IT administrator reporting in a somewhat unique manner, such as to a vice president for student affairs. However, the vast majority of these "other" responses reflected dual reporting relationships, most commonly to the top academic *and* the top administrative officers, although there were also some that jointly report to the president and one of these other top VP positions.

Finally, there is a significantly greater propensity for the top-ranking IT administrator to report to the top-ranking administrative or business officer in all Carnegie groups other than doctoral institutions. This is the case for a third to more than half of the respondents.

While reporting relationships are potentially interesting, who does the IT leader's performance evaluation is less important than whether or not the IT leader is a member of the executive cabinet. The ability to sit on the president's cabinet, executive committee, or whatever the top policy forum is called is far more important, in that this seat allows the top IT leader to actively engage in campus-level discussions about strategic directions and policy and to work with other senior officers in

Table 1-4
Functions Reporting to the Top IT Administrator

	All	DR	MA	BA	AA	Other
Academic/Research Computing	67.8%	80.6%	74.6%	70.7%	47.2%	53.1%
Administration of IT Organization	93.9%	96.3%	97.0%	93.2%	87.6%	91.7%
Administrative Systems	90.7%	91.0%	96.4%	93.2%	82.0%	84.4%
Computer Store	16.1%	27.6%	14.8%	12.8%	5.6%	16.7%
Desktop/User Support Services	95.8%	95.5%	97.6%	97.7%	96.6%	89.6%
Distance Education	28.5%	27.6%	40.2%	21.8%	25.8%	20.8%
Instructional Technology	66.8%	72.4%	75.7%	68.4%	53.9%	53.1%
IT Policy	93.1%	94.0%	94.1%	94.7%	87.6%	92.7%
IT Security	93.6%	95.5%	93.5%	94.0%	88.8%	94.8%
Library	15.6%	11.2%	20.1%	13.5%	15.7%	16.7%
Mailroom	4.3%	2.2%	3.6%	4.5%	5.6%	7.3%
Media Services	48.3%	46.3%	58.6%	45.9%	40.4%	43.8%
Networking Infrastructure and Services	96.6%	97.8%	98.2%	96.2%	94.4%	94.8%
Operations/Data Center	89.9%	95.5%	91.1%	88.0%	83.1%	88.5%
Print Services	35.6%	30.6%	27.2%	44.4%	39.3%	41.7%
Technology R&D	57.5%	64.9%	60.4%	59.4%	51.7%	44.8%
Telephony	74.6%	88.1%	77.5%	57.9%	70.8%	77.1%
Web Support Services	82.1%	89.6%	84.0%	77.4%	79.8%	77.1%
Other Function	11.8%	15.7%	16.6%	6.8%	10.1%	6.3%

understanding the role that IT can play in the various functional areas on campus. As shown in Table 1-3, the percentage of top IT leaders sitting on this top policy council is substantially greater than the percentage that actually report to the president.

With regard to the various functional areas that report to the top IT administrator, there are as many variations here as with titles. Because of the increasing complexity of information technology, there are many subgroupings and focal areas into which IT staff resources fall. The core data survey attempted to identify what functions are within the line operations of the top IT administrator as the head of the central IT organization.

There is a rather remarkable consistency in the responses to this question, with the top eight ranked areas the same irrespective of Carnegie group. These functional areas, in descending order, are network and infrastructure services, administration of the IT organization, security, desktop and user services, IT policy, administrative systems, operations and data center, and Web services. While not all Carnegie groups had precisely this order, the differences were insignificant, as shown in Table 1-4.

The remaining functional areas showed no uniform patterns, but some data points are worth noting. Academic and research computing is most commonly included in the IT organization line operations at doctoral institutions, with this percentage decreasing as institutional complexity decreases and as institutions are less likely to have substantial research programs. Distance education reports to the CIO far more frequently among master's institutions than any of the other

Table 1-5
Average Number of FTE Staff in the Central IT Organization in Each Functional Area

	All	DR	MA	BA	AA	Other
Academic/Research Computing	4.0	11.4	1.7	1.0	1.6	3.9
Administration of IT Organization	4.9	12.5	2.9	1.6	1.9	5.4
Administrative Systems	12.8	36.1	6.8	3.2	3.4	12.5
Desktop/User Support*	8.7	20.1	5.4	3.1	3.3	11.4
Instructional Technology	5.5	13.3	4.0	1.8	2.7	4.9
IT Policy	0.6	1.0	0.5	0.4	0.4	1.2
IT Security	1.2	2.6	0.6	0.4	0.6	2.4
Networking Infrastructure and Services	6.8	18.1	3.4	1.9	2.3	8.0
Operations/Data Center	6.3	19.6	2.7	0.9	1.8	5.8
Public Help Desk	3.2	7.1	2.0	1.2	1.3	4.2
Telephony	4.9	15.6	2.4	0.9	1.0	3.7
Web Support Services	2.7	6.1	1.6	1.1	1.3	3.6
Other Function	9.3	15.7	4.8	2.9	2.9	13.5
*Includes computer store						

groups. The computer store reports more often within the IT structure of doctoral institutions, probably due to the need to encourage the standardization of hardware in these schools, as well as the ability of these larger organizations to manage such an operation. Media services reports within the IT organization for about half of all respondents. Finally, it is worth noting that the library and IT organizations have been merged in about one out of six institutions; this will be a ratio to track in future years.

IT Staffing

The core data survey requested data related to staffing levels, which we have used to suggest several staffing ratios. Data related to staffing practices are also reported.

Staffing Levels

While it is fine to state that a given set of functions reports to the CIO, perhaps the more interesting question is how each of these functions is staffed on a comparative basis. The survey requested data not only for regular full-time equivalent (FTE) IT staff but also for student FTE employees because most IT organizations could not meet the needs of their campus constituencies without the skills and talents of the students who serve in a variety of capacities in IT support.

The deployment of staff and students in these areas needs to be understood in both absolute and relative terms. The tables in this section reflect those differences, with Tables 1-5 and 1-6 showing the average number of FTE staff and students, respectively, devoted to these various functions. Tables 1-7 and 1-8 show the percentage of total central FTE IT staff devoted to each function, thus controlling to some extent for size differences across Carnegie classes.

The core data survey respondents were allowed to assign fractional parts of individuals to the various functions, which is especially important to smaller schools with fewer staff who must cover more than one functional area. Thus, if a given individual spent half of her time doing network architecture, 30% of her time doing database work in administra-

Table 1-6
Average Number of FTE Student Employees
in the Central IT Organization in Each Functional Area

	All	DR	MA	BA	AA	Other
Academic/Research Computing	3.9	10.1	3.4	1.7	1.0	1.9
Administration of IT Organization	0.5	1.1	0.4	0.3	0.1	0.6
Administrative Systems	0.4	0.9	0.5	0.2	0.1	0.2
Desktop/User Support*	6.1	16.1	6.3	2.1	1.2	2.0
Instructional Technology	5.4	14.0	5.1	2.0	1.8	2.0
IT Policy	0.0	0.0	0.0	0.0	0.0	0.0
IT Security	0.3	0.3	0.1	0.0	0.0	1.6
Networking Infrastructure and Services	1.0	2.8	0.8	0.2	0.1	0.7
Operations/Data Center	0.8	2.6	0.7	0.2	0.1	0.2
Public Help Desk	4.1	8.9	3.7	3.9	0.8	1.7
Telephony	0.6	1.6	0.8	0.2	0.0	0.2
Web Support Services	0.8	1.2	1.0	0.4	0.2	0.8
Other Function	5.8	12.1	3.6	1.5	0.8	1.6
*Includes computer store						

Table 1-7
Percentage of FTE Staff in the Central IT Organization in Each Functional Area

	All	DR	MA	BA	AA	Other
Academic/Research Computing	5.6%	6.5%	5.3%	5.5%	5.6%	5.2%
Administration of IT Organization	8.7%	7.5%	8.7%	9.8%	9.1%	8.4%
Administrative Systems	18.5%	20.6%	19.6%	18.1%	12.8%	19.3%
Desktop/User Support*	15.9%	12.4%	16.2%	16.9%	17.5%	17.7%
Instructional Technology	8.6%	8.3%	9.3%	8.4%	10.2%	6.4%
IT Policy	1.6%	0.6%	1.6%	2.0%	2.2%	2.1%
IT Security	2.2%	1.5%	2.1%	2.1%	3.1%	2.8%
Networking Infrastructure and Services	11.1%	10.9%	10.2%	11.1%	12.4%	11.5%
Operations/Data Center	7.4%	11.1%	6.6%	5.2%	7.0%	7.4%
Public Help Desk	6.3%	4.3%	6.3%	7.1%	8.5%	6.0%
Telephony	6.2%	9.2%	6.3%	5.1%	4.1%	5.1%
Web Support Services	5.5%	3.7%	5.4%	6.5%	6.4%	5.9%
Other Function	2.4%	3.5%	2.5%	2.1%	1.2%	2.4%
*Includes computer store						

Table 1-8
Percentage of FTE Student Employees in the Central IT Organization in Each Functional Area

	ALL	DR	MA	BA	AA	Other
Academic/Research Computing	11.5%	12.8%	13.0%	10.7%	8.4%	9.4%
Administration of IT Organization	1.6%	1.7%	1.7%	1.3%	1.9%	1.0%
Administrative Systems	1.7%	1.9%	1.5%	1.5%	1.7%	2.1%
Desktop/User Support*	27.4%	23.9%	25.3%	28.0%	38.8%	25.7%
Instructional Technology	17.6%	24.5%	17.4%	14.9%	14.2%	12.8%
IT Policy	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%
IT Security	0.5%	0.8%	0.2%	0.3%	0.4%	1.3%
Networking Infrastructure and Services	3.8%	4.9%	3.7%	2.5%	5.0%	3.1%
Operations/Data Center	2.6%	3.6%	2.9%	1.9%	2.6%	1.6%
Public Help Desk	23.1%	16.3%	22.1%	29.9%	20.2%	30.7%
Telephony	2.9%	3.4%	3.3%	3.0%	0.8%	2.6%
Web Support Services	4.1%	2.5%	5.1%	4.3%	3.2%	5.8%
Other Function	3.1	3.8	3.8	1.6	2.6	3.8
*Includes computer store						

Table 1-9
Summary Statistics of Total Central FTE IT Staff

	Mean	Median	Minimum	Maximum
DR EXT	206.4	188.4	40.0	657.5
DR INT	84.1	74.0	23.5	190.5
MA I	39.7	31.0	4.0	167.5
MA II	15.3	13.5	4.0	52.0
BA LA	21.9	18.7	3.0	94.6
BA General	13.6	11.0	1.0	47.0
AA	22.0	17.5	1.0	89.0
Other	69.6	47.0	1.0	394.0

tive computing, and the remainder in security, assignment of time of .5, .3, and .2, respectively, would be acceptable.

Finally, in looking at these tables, part of the difference seen may be due to the available budget or the complexity of the institution. But we also recognize that there might be a critical mass for staffing a given area, and thus the comparable percentages may be skewed somewhat due to this factor.

The aggregation of data for like Carnegie groups works well for purposes of simplicity, and in almost all cases no significant meaning is lost. However, the total IT staff number (summing the IT staff numbers in all of the functional areas previously described) is more meaningful when like Carnegie classes are not grouped. The rather dramatic differences between the Doctoral Extensive and Doctoral Intensive schools (shown in Table 1-9) are of particular interest.

Table 1-10 shows the average number of central IT staff for each of the eight categories in the first column, the total of central and dis-

Table 1-10
Central FTE IT Staff, Total Central Plus Distributed IT Staff, and Percentage of Central IT Staff

	Central FTE IT Staff	Total FTE IT Staff*	% Central IT Staff
DR EXT	206.4	355.2	58.1%
DR INT	84.1	118.4	71.0%
MA I	39.7	47.8	83.1%
MA II	15.3	17.0	90.0%
BA LA	21.9	23.6	92.8%
BA General	13.6	15.8	86.0%
AA	22.0	24.9	88.3%
Other	69.6	100.4	69.3%
All	64.0	96.3	66.5%
*Central plus estimated distributed/departmental IT staff			

Table 1-11
Faculty Supported per Central FTE IT Staff Member

	All	DR	MA	BA	AA	Other
Mean	9.5	9.0	9.4	8.8	12.4	6.2
Median	8.2	8.1	8.7	7.8	10.1	6.1
Minimum	0.6	2.8	2.0	1.2	0.7	0.6
Maximum	83.8	30.0	41.2	83.8	83.8	20.8

tributed/departmental IT staff in the second column, and the percentage of total IT staff that the central IT staff represent in the third column. Clearly the number of distributed/departmental IT staff increases at a significant rate as the complexity of the institution increases. Note that the percentage of distributed staff is greatest at Doctoral Extensive campuses.

Highly complex, large, research-oriented institutions have a greater need for specialized, often disciplinarily trained IT staff in the departments and colleges to support faculty. These staff may focus far more on the academic applications in a particular field, while the central staff concern themselves with infrastructure, system-wide applications, general support, and so forth. It will be very interesting to see how these percentages of centralized staff change over time.

Staffing Ratios

While it is not clear whether stable ratios regarding staffing are possible, part of the CDS effort is to provide benchmarks for comparison and not just descriptive statistics. Ratio analysis has long been a standard in examining business performance, and it is hoped that a variety of key ratios will emerge via the CDS that allow for effective comparison of IT data. In terms of staffing, we examined two ratios with regard to central IT staff.

The first ratio is the number of faculty supported per central FTE IT staff member (shown in Table 1-11). We arrived at this ratio by taking the number of FTE faculty on campus (data reported by campuses to IPEDS[4]) and dividing it by the number of FTE central IT staff reported in our survey (derived by adding all the numbers entered into the question about functional area support).

The second ratio we calculated is students supported per central FTE IT staff member, derived by dividing the number of FTE students (again, from IPEDS data) by the number of FTE central IT staff (derived by adding all the numbers entered into the question

Table 1-12
Students Supported per Central FTE IT Staff Member

	All	DR	MA	BA	AA	Other
Mean	149.9	116.8	159.9	123.8	230.6	140.7
Median	128.5	110.3	144.6	98.0	187.4	113.5
Minimum	0.8	24.0	26.1	23.6	27.2	0.8
Maximum	1078.0	403.4	839.8	1078.0	836.5	740.7

Table 1-13
Separate Salary Scales for IT Professionals

	All	DR	MA	BA	AA	Other
Yes	32.9%	44.8%	39.1%	18.0%	34.8%	24.0%
No	67.1%	55.2%	60.9%	82.0%	65.2%	76.0%

Table 1-14
Separate IT Job Titles or a Broadband System for IT Professionals

	All	DR	MA	BA	AA	Other
Yes	60.4%	76.9%	60.9%	48.1%	55.1%	58.3%
No	39.6%	23.1%	39.1%	51.9%	44.9%	41.7%

Table 1-15
Dollar Amount in Budget per FTE IT Staff Member for Professional Development

	All	DR	MA	BA	AA	Other
Mean	$1,188	$1,134	$1,134	$1,245	$1,142	$1,327
Median	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
Minimum	$0	$0	$0	$0	$0	$0
Maximum	$7,333	$3,500	$4,500	$3,500	$4,500	$7,333

about functional area support). These ratios are shown in Table 1-12.

Staffing Practices

The Core Data Service also provides insight into a number of staffing practices. In terms of meeting market pressures related to hiring and keeping qualified staff, campuses turn to a variety of techniques. Overall, 32.9% of campuses report having separate salary scales for IT professionals, but as Table 1-13 indicates, this is highly uneven across Carnegie groups.

Alternatively, participants were asked if their campuses use either separate IT job titles *or* a broadband IT classification and compensation system. Table 1-14 indicates that about 60% of all respondents use one or the other of these approaches, with a significantly higher percentage of "yes" responses by doctoral universities.

Finally, training and ongoing professional development are critical to recruiting and retraining a qualified IT staff. Respondents were asked how many dollars are set aside in the annual budget and provided for professional development or training per FTE IT staff member. Table 1-15 shows a remarkable consistency in the statistical measures across all Carnegie classes.

IT Planning and Advisory Groups

In reference to IT planning, the core data survey asked whether the campus strategic

Table 1-16
Campus Strategic Plan Includes Strategies and Directions for IT

	All	DR	MA	BA	AA	Other
Yes	77.6%	73.1%	81.7%	73.7%	87.6%	72.9%
No	22.4%	26.9%	18.3%	26.3%	12.4%	27.1%

Table 1-17
Campus Has a Stand-Alone IT Strategic Plan

	All	DR	MA	BA	AA	Other
Yes	72.0%	76.9%	74.6%	59.4%	77.5%	72.9%
No	28.0%	23.1%	25.4%	40.6%	22.5%	27.1%

Table 1-18
Groups Providing Advice on IT Strategy

	All	DR	MA	BA	AA	Other
Trustee Committee	15.1%	20.9%	14.8%	16.5%	3.4%	16.7%
Administrative Committee	55.2%	65.7%	58.6%	41.4%	55.0%	54.2%
Faculty Committee	57.0%	70.1%	61.5%	51.9%	44.9%	49.0%
General Technology Committee	65.7%	60.4%	67.5%	63.2%	80.9%	59.4%
Other	23.0%	35.8%	26.0%	12.8%	10.1%	26.0%
No IT Advisory Groups	5.0%	3.0%	4.1%	6.0%	4.5%	8.3%

plan includes strategies and directions for IT, and whether or not the campus has a stand-alone IT strategic plan. As seen in Table 1-16, more than three-fourths of all respondents indicated that their institutional plans do address IT directions and strategies, and nearly that number also have a stand-alone IT strategic plan, as shown in Table 1-17.

The last two questions in the first section of the survey requested data on the various groups that provide feedback about IT strategies in general and then specifically about IT security and policy. Results for the former are reported in Table 1-18, while results for the latter are reported in Table 4-16 in Section Four as part of the discussion about security. Respondents could mark as many responses as were applicable in each case, so the percentages do not total to 100%, but rather reflect the frequency of usage of each category or type of committee.

Responses in the "other" field for this question were greater than expected, largely due to an obvious omission in the set of alternatives, namely, student committees. About 8% of the responses entered in the "other" field were for student committees. However, if we had included student committees as an alternative (which we will do next year), undoubtedly the percentage indicating student committee involvement would have been much greater.

Notes

1. Title data were normalized for analysis into the groupings shown in Table 1-1.
2. Carnegie classifications include more distinct breakouts than we are showing for most tables. For our analyses, we have combined Doctoral/Research Universities-Extensive and Doctoral/Research Universities-Intensive into DR; Master's Colleges and Universities I and Master's Colleges and Universities II into MA; Baccalaureate Colleges-Liberal Arts, Baccalaureate Colleges-General,

and Baccalaureate/Associate's Colleges into BA. Our AA group includes institutions with the classification of Associate's Colleges. Our "Other" category includes Tribal Colleges and Schools in the Specialized Institutions category as well as those institutions without a Carnegie class (primarily international institutions).

3. Dewitt Latimer's research about the CIO in higher education is described and summarized at <http://www.ciosinacademia.org>.

4. The Integrated Postsecondary Education Data System (IPEDS) is a single, comprehensive data collection program designed to capture data for the National Center for Education Statistics (NCES) for all institutions and educational organizations whose primary purpose is to provide postsecondary education. IPEDS collects institution-level data in such areas as enrollments, program completions, faculty, staff, and finances.

TWO

IT Financing and Management

Section two of the core data survey focused on capturing financial data about information technology on campus for fiscal year 2001–2002 as well as IT management practices, many of which have financial implications. There are six major focal areas of analysis and discussion in this section, including sources and amounts of funding for IT, IT personnel compensation, decentralized support costs for IT, technology fees, equipment and replacement planning, and outsourcing and service level agreements.

Sources and Amounts of Funding for IT

Understanding the funding and expenditures of IT organizations on college and university campuses has long been a challenge. One of the biggest hurdles in defining the parameters of the Core Data Service was coming up with a methodology that would be relevant for all types of institutions so that a common questionnaire could be used.

The survey requested data for six sources of funding for the central IT organization thought to be applicable to most higher education institutions. (Note that the survey requested actual allocations/revenues for the fiscal year 2001–2002, rather than projected budget for fiscal year 2002–2003.) In Table 2-1, these sources are listed and the median values for each of the Carnegie classes are presented in thousands of dollars. Medians rather than means are presented because this value presents a more accurate reflection of actual campus averages, as a statistical mean provides much higher values (especially for doctoral campuses) due to the impact of having mega-campus values in the data set.

In the Web-based interactive database component of the Core Data Service (available to all who completed the survey), means, medians, highs, and lows are available, and ranges are not as distorted when a fairly narrowly defined peer group is examined. The values in each cell of Table 2-1 are the medians of those respondents who reported any revenue in a category, so these values do not reflect the campuses that don't have any such revenue stream. Table 2-2 shows the percentages of campuses that have revenues in these categories.

One can see from Table 2-1 that doctoral campuses have a much heavier dependence on funding sources other than operating appropriations than do other kinds of campuses. They appear to rely heavily on capital appropriations and charging for central services as a method of generating revenue for the IT organization. Not only are the values in dollars higher, the propensity of doctoral institutions to employ chargeback is also much greater, as shown in Table 2-2.

Not surprisingly, as institutional complexity increases, so does the amount of funding from each source for the central IT organization. The dollar amounts for most of the funding sources are significantly greater for doctoral institutions compared to the other groups, while the amounts reported for AA and BA schools are the

Table 2-1
Median Amounts of Funding for the Central IT Organization
(in $1,000s of dollars)

	All	DR	MA	BA	AA	Other
Operating appropriation to central IT organization	$2,130	$9,800	$2,047	$985	$950	$3,000
Capital appropriations for central IT organization	$498	$1,500	$473	$280	$275	$572
Resale of central services (chargeback) to departments	$800	$5,358	$143	$44	$88	$626
Resale of central services to external entities	$253	$619	$211	$10	$12	$150
Resale of products to departments	$200	$500	$28	$12	$30	$525
Resale of products to external entities	$62	$124	$36	$12	$40	$215

Table 2-2
Percentage of Campus Central IT Organizations Having Various Sources of IT Funding

	All	DR	MA	BA	AA	Other
Operating appropriation to central IT organization	100%	100%	100%	100%	100%	100%
Capital appropriations for central IT organization	67.0%	60.4%	68.0%	64.1%	70.3%	75.3%
Resale of central services (chargeback) to departments	41.3%	82.8%	37.3%	18.3%	7.7%	53.6%
Resale of central services to external entities	21.4%	47.8%	13.6%	11.5%	5.5%	26.8%
Resale of products to departments	16.7%	38.8%	10.1%	7.6%	3.3%	22.7%
Resale of products to external entities	10.6%	23.1%	5.3%	8.4%	1.1%	14.4%

lowest. The relationship between Carnegie class and the dollar amount received by the central IT organization from these various funding sources is probably due primarily to differences in overall institutional resources. However, Carnegie classification is still a reliable predictor of the amount of money allocated to the IT organization from operating appropriations after controlling for campus budget. Thus, for this funding source, actual dollar amount provided to the IT organization may be due not only to level of overall campus resources but

Table 2-3
Central IT Funding per FTE Faculty Member

	All	DR	MA	BA	AA	Other
Mean	$14,303	$16,634	$13,040	$13,079	$11,439	$24,010
Median	$12,271	$14,183	$11,762	$12,314	$9,131	$18,307

Table 2-4
Central IT Funding per FTE Student

	All	DR	MA	BA	AA	Other
Mean	$1,400	$1,481	$809	$1,045	$502	$3,607
Median	$765	$1,118	$713	$916	$437	$732

also to different practices in money allocation among Carnegie classes.

The core data survey included a question about the source of funding for 13 functions potentially supported by the IT organization in order to understand whether these functions are supported primarily through operating and/or capital allocations, chargeback, fees, and so forth. While these analyses are too extensive to include in detail in this summary, they provide insight into the campus strategy and how this varies by Carnegie class. In general, for all functions the vast majority of funds come from the allocation to the central IT organization from the campus operating budget. This typically does not vary across Carnegie classes. The only exception to this pattern is the funding profile of telephony: among doctoral schools cost recovery, not the campus operating budget, was the largest contributor by a large margin for the telephony function. The relative importance of cost recovery dollars as a funding source among doctoral institutions as compared to other Carnegie classes is not as compelling for other IT functions, but is nonetheless a reliable finding. Overall, reliance on cost recovery as a funding source for IT increases as the complexity of responding institutions increases.

One of the goals of the Core Data Service is to allow for the exploration of these data to see if other business ratios can be found that would be both stable and useful. In the past, one of the key budget ratios that was useful to examine was the percentage of the educational and general (E & G) budget devoted to the central IT organization. With changes in accounting regulations and the movement away from fund accounting, this E & G value has disappeared. Currently we are exploring possible ratios related to expenditures and revenues, using IPEDS[1] and other regularly reported campus data, but thus far we have found no reliable, consistent, and/or meaningful denominator. This effort will be ongoing, but the current level of ambiguity led us to forego pursuing any such ratios for this report.

We did pursue two other ratios in order to explore whether any standards or benchmarks can be defined, using data reported through IPEDS for FTE faculty and students. With the caveat that these are preliminary findings, not hard science, it is interesting to note the relative consistency of the ratio of central IT dollars per faculty member presented in Table 2-3, as well as the less consistent student ratio presented in Table 2-4. These two ratios can be examined longitudinally in the upcoming years.

Central IT Personnel Compensation

In Table 2-5, the amount of compensation (including benefits) paid by or through the central IT organization is shown for five categories of personnel in thousands of dollars. The total of these numbers for fiscal year 2001–2002 differs significantly by Carnegie classification. As expected, the average compensation paid to each of these personnel

Table 2-5
Median Total Compensation for Various Types of Central IT Personnel (in $1,000s of dollars)

	All	DR	MA	BA	AA	Other
Staff	$1,389	$8,062	$1,270	$656	$650	$1,583
Students	$99	$394	$118	$45	$34	$41
Consultants	$44	$140	$28	$20	$30	$50
Contractors	$68	$176	$50	$30	$45	$120
Other	$130	$249	$143	$3	$14	$43

Table 2-6
Percentage of Campus Central IT Organizations That Employ Various Categories of Personnel

	All	DR	MA	BA	AA	Other
Staff	99.7%	100%	99.4%	99.2%	100%	100%
Students	84.6%	96.3%	92.3%	92.4%	70.3%	57.7%
Consultants	52.1%	58.2%	55.0%	38.2%	49.5%	59.8%
Contractors	43.6%	51.5%	41.4%	33.6%	44.0%	49.5%
Other	2.1%	5.2%	1.8%	0.8%	1.1%	1.0%

Table 2-7
Percentages of Total Central IT Funding Spent on Central IT Staff Compensation

	All	DR	MA	BA	AA	Other
Mean	50.6%	50.3%	50.5%	50.8%	55.0%	46.7%
Median	48.4%	48.5%	48.8%	48.5%	53.2%	44.6%

types increases with institutional complexity; in each case, either AA or BA schools reported the lowest compensations and doctoral schools the greatest. This is consistent with the finding above for overall central IT funding, and likely for the same reasons with respect to level of overall campus resources.

Just as in Table 2-1, the values in each cell of Table 2-5 are the medians rather than means of those that reported any compensation in a category, and these values do not reflect the campuses that don't have any such expenditure. Table 2-6 shows the percentages of campuses that employ each category of personnel.

In exploring ratios that might be helpful to campuses in managing their IT resources, we looked at the total of expenditures reported for IT staff as a function of total central IT funding (derived from the earlier question about allocations/revenues from the six funding sources). The ratio of staff to total funding showed no differences across Carnegie groups and is really remarkably consistent, with about half of the total funding being spent on IT staff costs, as shown in Table 2-7. Maintaining a proper balance between people and technology has long been known to be an important consideration. The ratio developed from these data would appear to provide some quantitative information about what is most common, irrespective of the nature of the institution, and might suggest an appropriate or acceptable balance.

Decentralized IT Expenditures

Our survey sought to capture data about estimated compensation (including benefits) for IT personnel and other IT-related expendi-

Table 2-8
Mean Compensation for IT Professionals and Other IT Expenses
Outside of the Central IT Organization (in $1,000s of dollars)

	All	DR	MA	BA	AA	Other
IT Compensation	$1,987	$9,101	$404	$57	$138	$1,239
Other IT Expenses	$2,630	$10,456	$599	$126	$285	$1,970

Table 2-9
Percentage of Institutions That Cannot Estimate Compensation for IT Professionals
Outside of the Central IT Organization

	All	DR	MA	BA	AA	Other
Unknown	19.9%	32.1%	14.2%	13.7%	12.1%	28.9%

Table 2-10
Percentage of Central IT Personnel Expenditures
As a Function of Total Campus IT Personnel Expenditures

	All	DR	MA	BA	AA	Other
Mean	87.6%	75.7%	89.7%	95.6%	92.4%	85.2%
Median	97.3%	79.3%	96.5%	100%	100%	94.7%

tures (hardware, software, and so forth) outside of the central IT organization. Such decentralized expenditures vary dramatically based on the type of institution.

The average total compensation reported for staff classified as IT professionals employed outside of the central IT organization differs considerably by Carnegie class, as seen in the first row of Table 2-8. In fact, all comparisons revealed significant differences among groups. As with other IT financing data points, the average of total compensation increased in direct relation to the complexity of the institution. The second row in this table, labeled "Other IT Expenses," reflects the expenditures by units outside of the central IT organization on equipment and all other non-personnel items. The sum of these two numbers (personnel compensation plus all other expenditures) is an estimate of how much institutions are spending outside of their central IT organizations.

It is important to note, however, that 124 institutions reported that the total compensation paid to IT professionals outside of the central IT organization is unknown. As shown in Table 2-9, the group most frequently reporting not knowing this amount is doctoral institutions, in all likelihood because of their complexity and distributed nature. Of all responding campuses, about 80% were able to make a reasonable estimate about what was spent outside of their central IT organizations, with this percent lower for doctoral institutions. We concluded that campuses reporting zero dollars spent are essentially completely centralized, with all staff classified as IT professionals being employed within the central IT organization.

With the increased specialization in IT, especially in academic computing, it is likely that the relative extent of decentralized versus centralized computing will only increase. In order to see what trends might occur in the future, we developed two ratios as a baseline for such comparisons.

The first of these ratios has to do with central IT personnel compensation compared with the total of such campus expenditures (derived by combining the centralized and decentralized compensation numbers reported). As seen in Table 2-10, this number is quite

Table 2-11
Percentage of Total Centralized IT Funding as a Function of Total Campus IT Expenditures

	All	DR	MA	BA	AA	Other
Mean	81.1%	69.5%	84.9%	89.7%	83.5%	77.1%
Median	86.9%	69.2%	89.9%	94.1%	87.6%	81.3%

Table 2-12
Percentage of Campuses That Charge General Technology Fees

	All	DR	MA	BA	AA	Other
Yes	50.2%	59.0%	56.8%	36.6%	73.6%	22.7%

Table 2-13
Methods of Charging a General Technology Fee

	All	DR	MA	BA	AA	Other
Flat fee per year	12.5%	10.1%	12.5%	25.0%	0.0%	31.8%
Flat fee per semester/quarter	39.7%	39.2%	50.0%	54.2%	14.9%	40.9%
Percentage of tuition	2.9%	2.5%	4.2%	2.1%	3.0%	0.0%
Based on credit hours	37.8%	34.2%	29.2%	16.7%	77.6%	13.6%
Other	7.1%	13.9%	4.2%	2.1%	4.5%	13.6%

high for BA and AA schools, which appear to have predominantly central-only IT operations. This number is significantly lower for MA institutions and lower yet for doctoral institutions. This is essentially an indicator of the extent of decentralization occurring in these types of schools, and next year's data will help us understand whether any trends can be seen in this area.

The second ratio looks at the total central IT funding compared with the total campus IT expenditures (derived by adding total central IT organization funding to estimated IT-related expenditures outside of the central IT organization). These mean and median percentages are shown in Table 2-11. There is a pattern similar to the first ratio, but the ratios here are lower for smaller and/or less complex institutions, reflecting that commitments for equipment and other IT-related costs occur in a slightly more decentralized fashion at such schools, even though decentralized staffing is a relatively rare occurrence for these groups.

It appears that nearly one-third of all campus IT expenses are now occurring outside of the central IT organization at doctoral institutions. This ratio might even be greater if those institutions that were unable to report distributed costs had provided estimates, as it may well be that their inability to do so was at least in part due to a much more decentralized set of operations. These will also be interesting ratios to watch in upcoming years.

Technology Fees

The percentage of schools that reported charging a general student technology fee differed significantly among Carnegie classes, as seen in Table 2-12. The highest percentage of schools charging such a fee was found among AA schools, with nearly three-fourths of these institutions doing so. Approximately 60% of MA and doctoral institutions charge a general student technology fee, and only slightly more than one-third of BA schools reported that they charge such a fee. In addition, not only does the percentage of schools charging a technology fee differ by Carnegie class, but

Table 2-14
Total Dollars Collected per Campus from Technology Fees (in $1,000s of Dollars)

	All	DR	MA	BA	AA	Other
Mean	$1,241	$3,047	$956	$331	$466	$321
Median	$605	$2,715	$673	$211	$300	$128

Table 2-15
Determining How Technology Fees Are Spent

Who Determines?	All	DR	MA	BA	AA	Other
Students	31.1%	36.7%	33.3%	8.3%	44.8%	9.1%
IT administration	55.8%	54.4%	61.5%	43.8%	62.7%	40.9%
Campus committee	37.8%	41.8%	36.5%	29.2%	47.8%	18.2%
Senior administration	63.1%	58.2%	62.5%	62.5%	65.7%	77.3%
State agency/system	2.6%	1.3%	3.1%	0.0%	6.0%	0.0%
Funds restricted by policy	23.7%	20.3%	26.0%	22.9%	31.3%	4.5%
Other means determine	6.1%	11.4%	5.2%	4.2%	4.5%	0.0%

so does the basis for charging the fee, as seen in Table 2-13. Charging a flat fee per semester/quarter was the most common method for all Carnegie classes except for AA institutions, for which basing the fee on credit hours was by far the most popular strategy.

The average total dollars generated by the student technology fee also differs significantly as a function of Carnegie classification, as seen in Table 2-14, which shows the mean and median total dollars collected per campus from technology fees for those schools that charge a technology fee. In general, the total dollars generated increases in direct relation to the number of FTE students per campus. "Other," AA, and BA institutions do not differ significantly from each other, but MA and doctoral institutions reported greater total dollar amounts than other Carnegie classes. Obviously, with more students on campus, larger schools (for example, doctoral institutions) would be expected to produce a larger amount of money from a general student technology fee. However, after controlling statistically for indicators of campus size (FTE students, number of faculty), Carnegie class was still a reliable predictor of the total amount of money generated from the technology fee. Thus, differences in this dollar amount across Carnegie classes can not be fully explained by differences in campus size.

Methods of determining how money generated by the technology fee is spent are consistent across Carnegie classes, as seen in Table 2-15. However, the percentages of schools that reported that students determine how this money is spent differ significantly among classes. A greater percentage of doctoral, MA, and AA schools (36.7%, 33.3%, and 44.8%, respectively) indicated that students determine how technology fee money is spent compared to BA and "Other" schools, where such a practice is uncommon. There is a similar finding concerning the role of a campus committee in deciding how the technology fee money is spent.

Another form of technology fee that was examined has to do with whether a separate fee for residence-hall network connections is charged, as shown in Table 2-16. The charging of such a fee is strongly related to Carnegie class. This is not surprising, given the dramatic differences among Carnegie classes in the percentage of institutions with residence halls, shown in the fourth row of this table. Examining only those schools with residence halls that have network connections similarly revealed that the practice of charging a separate fee for residence-hall network connections is signifi-

Table 2-16
Separate Residence-Hall Network Connection Fee

	All	DR	MA	BA	AA	Other
Yes	16.9%	26.1%	17.8%	6.9%	3.3%	28.9%
No	62.2%	73.1%	75.1%	89.3%	8.8%	38.1%
No network connections	3.9%	0.0%	2.4%	0.8%	7.7%	12.4%
No residence halls	17.0%	0.7%	4.7%	3.1%	80.2%	20.6%

Table 2-17
Percentage of Institutions Owning/Leasing Various Numbers of Computers

Number of Computers Owned/Leased	All	DR	MA	BA	AA	Other
0–500	16.7%	0.7%	11.2%	35.1%	19.8%	20.6%
501–1,000	21.1%	0.7%	26.6%	38.2%	29.7%	8.2%
1,001–2,000	19.9%	5.2%	30.2%	20.6%	29.7%	12.4%
2,001–3,000	10.9%	10.4%	15.4%	6.1%	11.0%	10.3%
3,001–5,000	11.3%	15.7%	12.4%	0.0%	7.7%	21.6%
5,001–10,000	11.7%	34.3%	4.1%	0.0%	2.2%	18.6%
More than 10,000	8.4%	32.8%	0.0%	0.0%	0.0%	8.2%

Table 2-18
Number of Computers on Campus

	All	DR	MA	BA	AA	Other
Mean	4,116	11,596	1,878	863	1,462	4,561
Median	1,578	7,450	1,450	650	1,200	3,000

cantly related to Carnegie class. This practice is most common among "Other" institutions among this subset of respondents, and least common among BA schools (43.1% and 7.1%, respectively). Overall, charging such a fee is not a widespread practice, with fewer than 20% of all institutions doing so.

Equipment and Replacement Planning

As institutional complexity increases, so does the number of computers owned or leased by the institution, as seen in Table 2-17. Approximately one-half of the AA and three-fourths of the BA schools responding to our survey reported owning or leasing 1,000 or fewer computers; more than half of the MA institutions reported owning or leasing 501–2,000 computers; and nearly 70% of doctoral schools owned or leased 5,001 or more computers, with nearly one-third of this group reporting more than 10,000 such computers. An examination of the means and medians similarly illustrates this pattern, as seen in Table 2-18. After controlling statistically for budget, FTE students, and faculty, Carnegie classification was no longer a significant predictor of the number of computers that a campus owns or leases. This suggests that the relationship of Carnegie class to number of computers is due to differences in institution size, as measured by FTE students and number of faculty.

In an attempt to better understand the total number of computers owned or leased by a campus and to be able to make more relevant

Table 2-19
Number of Campus-Owned/Leased Computers per FTE Faculty Member

	All	DR	MA	BA	AA	Other
Mean	7.6	8.2	6.6	7.1	8.6	10.0
Median	6.5	7.2	6.0	6.3	7.5	7.5

Table 2-20
Number of Campus-Owned/Leased Computers per FTE Student

	All	DR	MA	BA	AA	Other
Mean	0.62	0.71	0.40	0.55	0.42	1.19
Median	0.42	0.53	0.35	0.47	0.38	0.45

Table 2-21
Percentage of Campuses Using Various Computer Replacement Cycles in Their Planning Efforts

Replacement Cycle	All	DR	MA	BA	AA	Other
None	13.5%	22.4%	11.8%	12.2%	8.8%	10.3%
< 3 years	3.2%	1.5%	3.6%	4.6%	4.4%	2.1%
3 years	37.3%	35.1%	46.2%	29.0%	33.0%	40.2%
3–4 years	13.7%	14.2%	13.0%	13.0%	16.5%	12.4%
4 years	24.8%	20.9%	19.5%	36.6%	25.3%	22.7%
> 4 years	7.6%	6.0%	5.9%	4.6%	12.1%	12.4%

comparisons, we created two ratios, namely the number of computers per faculty FTE and the number of computers per student FTE, as seen in Tables 2-19 and 2-20. The number of computers owned or leased by an institution per FTE faculty member is significantly related to Carnegie classification. The highest averages are observed among the doctoral, AA, and "Other" classes. These groups do not differ significantly from each other, but they do differ from both the BA and MA schools. The number of computers does not differ significantly between BA and MA schools. For doctoral institutions and for the "Other" institutions (which include many research universities in other countries), the research component and number of machines for the research enterprise probably explain the numbers for these two categories of institutions. With AA schools the number probably reflects the higher student-faculty ratio and the need for institutionally owned machines to fulfill the teaching mission.

The number of computers owned or leased by an institution per FTE student also varies across Carnegie classes. Doctoral and "Other" institutions reported the greatest number of computers per student, and the differences between these classes and each of the other three are all significant. BA schools have, on average, significantly more computers per student than institutions within the AA and MA classes.

While the number of computers may be of interest to those who manage information technology, the biggest challenge faced by all IT managers is assuring that this equipment is replaced in a systematic fashion in order to capitalize on the newer technologies and to reduce support costs. Therefore, the core data survey explored a variety of issues related to computer replacement.

The planned replacement cycle for campus computers reported by respondents varies by Carnegie class, as seen in Table 2-21. The percentage of doctoral institutions reporting that

Table 2-22
Percentage of Campuses with Replacement Funding in the Budget for Various Percents of Computers

Percent of Computers with Funded Replacement Cycles	All	DR	MA	BA	AA	Other
0–19%	28.3%	47.8%	26.0%	21.4%	19.8%	22.7%
20–39%	17.0%	19.4%	17.2%	9.2%	18.7%	22.7%
40–59%	9.0%	6.7%	8.9%	13.0%	8.8%	7.2%
60–79%	12.7%	13.4%	11.2%	7.6%	18.7%	15.5%
80–100%	33.0%	12.7%	36.7%	48.9%	34.1%	32.0%

Table 2-23
Estimated Percentage of Campus Computers with Funded Replacement Cycles

	All	DR	MA	BA	AA	Other
Mean	49.4%	30.9%	51.8%	60.8%	54.7%	50.4%
Median	50.0%	20.0%	50.0%	75.0%	65.0%	50.0%

they have no planned replacement cycle is approximately twice as great as for other classes (22.4%). Approximately 50% of all responding institutions endorse a replacement cycle of either three years or between three and four years. This percentage is remarkably similar across Carnegie classes, although the percentage for MA schools is higher at approximately 60%. About one-fourth of MA and doctoral schools indicated that their replacement cycle is either four years or greater, whereas the percentage for all other classes for this cycle is approximately 35–40%.

It is one thing to have a plan for replacement of computers and quite another to have the funds for this replacement embedded (that is, actually funded) in the budget. Table 2-22 presents a profile of each Carnegie group related to the percentage of computers actually funded in the campus budget. An alternative presentation of these data is shown in Table 2-23, which provides the mean and median percentages of campus computers that have replacement funding in the budget.

Approximately half of all institutions in each Carnegie class reported that 60% or more of their campus computers are on a replacement cycle actually funded in the budget, with the exception of doctoral schools, among which the percentage is about 26%. Nearly half of all BA schools reported that 80–100% of their campus computers are on a funded replacement cycle, whereas nearly this same percentage of doctoral schools reported that 0–19% of their campus computers are on a funded replacement cycle. The average percentage reported by BA schools is significantly larger than all other classes, with the exception of AA schools, and the percentage for doctoral schools is significantly lower than for all other classes.

Finally, having a replacement plan and, further, having the replacement funds budgeted tells part of the story, but additionally respondents were asked what percentage of computers were actually replaced in the preceding fiscal year. These data are shown in Table 2-24. For those campuses that had a plan for computer replacement, the data for actually replaced computers were then compared with the expressed plan. If the actual replacement was within 5% of the plan, campuses were grouped into a category called "On Plan," while if they replaced more than this percentage they were labeled "Ahead of Plan,"

Table 2-24
Percentage of Campus Computers Replaced in Previous Fiscal Year

	All	DR	MA	BA	AA	Other
0–5%	4.8%	3.7%	4.7%	8.4%	2.2%	4.1%
6–10%	8.0%	7.5%	5.9%	9.9%	8.8%	9.3%
11–15%	8.2%	8.2%	7.7%	10.7%	6.6%	7.2%
16–20%	25.7%	31.3%	25.4%	25.2%	20.9%	23.7%
21–25%	21.1%	23.9%	18.3%	19.8%	27.5%	17.5%
26–30%	16.6%	15.7%	16.0%	11.5%	20.9%	21.6%
31–35%	10.9%	8.2%	15.4%	8.4%	11.0%	10.3%
> 35%	4.7%	1.4%	6.5%	6.1%	2.2%	6.2%

Table 2-25
Comparison of Actual Computer Replacement to the Expressed Replacement Plan for Schools with Replacement Plans

	All	DR	MA	BA	AA	Other
Ahead of Plan	7.6%	5.8%	8.7%	7.8%	6.0%	9.2%
On Plan	50.4%	50.0%	49.0%	47.8%	56.6%	50.6%
Behind Plan	42.0%	44.2%	42.3%	44.3%	37.3%	40.2%

Table 2-26
Percentage of Campuses with a Funding Model That Includes Renewal of the IT Capital Plant

	All	DR	MA	BA	AA	Other
Yes	48.9%	47.8%	47.9%	49.6%	45.1%	54.6%
No	51.1%	52.2%	52.1%	50.4%	54.9%	45.4%

and if they replaced less than this percentage they were labeled "Behind Plan." These data are presented in Table 2-25. While this methodology is not perfect, it does give one a sense that about 60% of campuses have a plan and are living up to that plan, despite economic hardships in higher education.

Finally, we examined the data related to capital replacement of the IT infrastructure other than computers, including renewal of the wiring, electronics associated with the network, and so forth. Approximately half of all institutions reported that the current funding model of their campuses includes renewal of the capital plant, as seen in Table 2-26. The proportion of schools reporting that this is the case does not differ significantly across Carnegie classes.

Service Level Agreements and Outsourcing

The use of external suppliers to run a campus IT function appears not to be a common practice overall. Over 60% of all institutions reported that they do not outsource or use ASPs at all, as shown in Table 2-27. This finding is highly consistent with a recent ECAR report on outsourcing.[2] There was a nonsignificant trend for the percentages of schools that reported use of outsourcing to differ by Carnegie class, with AA schools more often and doctoral institutions less often reporting outsourcing arrangements.

In looking at the areas in which campuses use outsourcers, there are only differences between Carnegie classes for "administrative

Table 2-27
Percentage of Campuses Using External Suppliers to Run Various IT Functions

	All	DR	MA	BA	AA	Other
Administrative systems—transaction systems operation	9.2%	3.7%	11.8%	12.2%	5.5%	11.3%
Administrative systems—application development	6.3%	2.2%	5.9%	6.9%	5.5%	12.4%
Administrative systems—project management for implementations	4.5%	4.5%	4.1%	5.3%	4.4%	4.1%
Data center/computer operations	2.9%	1.5%	5.3%	2.3%	2.2%	2.1%
Desktop/user support services	3.2%	3.0%	1.8%	3.1%	3.3%	6.2%
Instructional management system	6.4%	6.7%	8.9%	3.8%	6.6%	5.2%
Media services	0.8%	0.7%	0.0%	1.5%	1.1%	1.0%
Network services	2.9%	2.2%	2.4%	4.6%	2.2%	3.1%
Print services	3.9%	3.7%	3.0%	3.1%	4.4%	6.2%
Telephone services	10.9%	9.0%	9.5%	11.5%	7.7%	18.6%
Web development/hosting	8.4%	4.5%	9.5%	13.0%	4.4%	9.3%
All central IT staff and services	1.1%	0.7%	1.8%	1.5%	1.1%	0.0%
Other IT service	10.9%	20.9%	8.3%	6.9%	7.7%	10.3%
No external suppliers	61.1%	56.7%	61.5%	64.1%	71.4%	52.6%

Table 2-28
Percentage of Campuses Using Written Service Level Agreements for Various IT Services

	All	DR	MA	BA	AA	Other
Academic/Research Support	11.3%	11.9%	11.2%	6.1%	9.9%	18.6%
Administrative Systems Support	28.5%	23.1%	27.8%	34.4%	17.6%	39.2%
Data Center Services	19.6%	32.8%	17.2%	10.7%	11.0%	25.8%
Desktop/User Support	25.7%	38.8%	21.3%	13.7%	14.3%	42.3%
Instructional Technology Support	11.7%	11.9%	14.8%	6.1%	8.8%	16.5%
Media Services	8.8%	11.2%	9.5%	3.8%	5.5%	14.4%
Network Services	25.6%	26.1%	24.9%	23.7%	19.8%	34.0%
Print Services	9.6%	11.2%	8.3%	6.1%	11.0%	13.4%
Telephone Services	25.4%	23.9%	26.6%	27.5%	17.6%	29.9%
Web Support Services	12.5%	16.4%	10.1%	7.6%	7.7%	22.7%
Other IT Services	4.7%	11.9%	4.1%	1.5%	1.1%	3.1%
No SLAs	50.0%	35.8%	52.7%	55.0%	71.4%	38.1%

systems—transaction systems operation" and "administrative systems—application development." The percentage of MA, BA, and "Other" institutions that reported using an external supplier to run transaction systems operation is approximately two to three times greater than the percentage of doctoral and AA schools, but these are still relatively small percentages of each Carnegie group.

Finally, we analyzed the use of service level agreements, with results shown in Table 2-28. Service level agreements in any area are only found at about half of all campuses. The percentage of schools with IT services covered by written service level agreements differs significantly by Carnegie classification for many of the services examined, with a larger number of doctoral and "Other" campuses overall having such agreements in place.

Notes

1. The Integrated Postsecondary Education Data System (IPEDS) is a single, comprehensive data collection program designed to capture data for the National Center for Education Statistics (NCES) for all institutions and educational organizations whose primary purpose is to provide postsecondary education. IPEDS collects institution-level data in such areas as enrollments, program completions, faculty, staff, and finances.
2. Ellen Hassett et al., *IT Outsourcing in Higher Education* (Boulder, Colo.: EDUCAUSE Center for Applied Research, 2002). Information about ordering this publication is available at <http: www.educause.edu/ecar/research/doclisters.asp>. A summary of key findings is available at <http://www.educause.edu/ir/library/pdf/ecar_so/ers/ERS0201/ekf0201.pdf> at no charge.

THREE

Faculty and Student Computing

Section three of the core data survey captured data about campus computing support in general terms of services and infrastructure; specific support for faculty in the use of technology in teaching and learning; and student computing policy and infrastructure. Because of the increasingly widespread use of and interest in course management systems, data about these systems are highlighted separately.

Campus Computing Support

Campus IT organizations provide common support services and infrastructure in support of the academic mission. It is this service environment that both allows students and faculty to do their work and supports the instructional mission of the campus.

The first dimension of this environment has to do with the availability of technological assistance on a campus. The help desk is critical in helping students and faculty overcome the hardware and software challenges that might interfere with their using technology in learning or research efforts. As seen in Table 3-1, the amount of support provided at different classes of institution varies, with significantly more assistance available at doctoral institutions than other categories, more at masters institutions than baccalaureate or community college campuses, and so on. While there is much discussion about the need for support on an around-the-clock basis, with support available 24×7, these data tell us that this is not common practice.

A second dimension of campus support has to do with the availability of e-mail and specifically whether or not students are issued e-mail accounts for the purpose of receiving official campus communications. The ubiquity of e-mail access is important to understand, as this determines whether or not faculty and/or administrators can count on being able to reach all students in a particular class or all students on campus to inform them of policies, events, and so forth. As seen in Table 3-2, the

Table 3-1
Help Desk Availability

	All	DR	MA	BA	AA	Other
Number of hours per week the help desk is available	66.5	82.5	68.8	58.8	53.9	62.2
Percentage of campuses that have 24x7 support	4.7%	13.4%	3.6%	0.0%	1.1%	4.2%

Table 3-2
Percentage of Institutions That Issue E-Mail Accounts to All Students

	All	DR	MA	BA	AA	Other
Yes	85.8%	91.0%	90.5%	94.0%	55.1%	87.5%
No	14.2%	9.0%	9.5%	6.0%	44.9%	12.5%

Table 3-3
Policy on Offering Universal Student E-Mail

	All	DR	MA	BA	AA	Other
Never offered	6.1%	3.6%	3.6%	1.5%	27.0%	5.2%
Offered with no plans to discontinue	87.4%	91.1%	91.1%	92.5%	53.9%	91.7%
Offered but considering discontinuing	2.7%	3.0%	3.0%	3.0%	5.6%	2.1%
Already stopped offering	3.7%	2.4%	2.4%	3.0%	13.5%	1.0%

Table 3-4
Percentage of Classrooms Equipped with Various Technologies

	All	DR	MA	BA	AA	Other
Wired Internet Connectivity	81.5%	78.6%	87.9%	84.2%	83.8%	68.1%
Wireless Internet Connectivity	17.7%	20.7%	18.0%	15.5%	19.6%	14.5%
LCD Projectors	39.0%	38.1%	37.4%	38.2%	38.6%	44.2%
Computers	31.0%	22.4%	31.3%	34.5%	36.8%	32.0%
Televisions	33.7%	23.9%	39.7%	32.4%	44.7%	28.4%

practice of providing all students an e-mail account is extremely common and fairly consistent for all Carnegie groups except for associate's colleges. This latter finding is probably due to the nature of these institutions, most of which are community colleges that serve diverse populations, almost all of whom are commuter students, and who are usually not long-term attendees of the institution.

Because of the number of students who already have e-mail accounts when they arrive on campus, some campuses have stopped offering universal e-mail accounts. The data in Table 3-3 help us understand what is happening with regard to such access, interpret the data in the previous table, and identify patterns in the different strategies being used by different types of institution.

The last dimension of general campus support is the extent to which technology is available in classrooms so that faculty and students can use electronic means for learning in their in-class experiences. The results appear in Table 3-4. The percentage of classrooms with wired Internet connectivity in our responding institutions is relatively high in all classes of higher education institutions, but it is somewhat lower for doctoral and "other" institutions. One likely explanation for the smaller percentage of wired classrooms in doctoral institutions is that they usually have very large inventories of classrooms, so even

Table 3-5
Types of Support for Faculty in the Use of Technology in Teaching and Learning

	All	DR	MA	BA	AA	Other
Designated instructional technology center	66.3%	87.3%	68.6%	48.9%	66.3%	57.3%
Faculty teaching/ excellence center that works with IT	49.8%	60.4%	54.4%	31.6%	58.4%	43.8%
Instructional designers who work with technologists	51.7%	73.1%	52.7%	26.3%	51.7%	55.2%
Instructional technologists who are discipline specialists	17.6%	28.4%	11.2%	18.8%	13.5%	15.6%
Intensive support for faculty using technology	46.9%	51.5%	49.7%	44.4%	39.3%	45.8%
Faculty training through scheduled seminars	83.9%	92.5%	87.0%	77.4%	78.7%	80.2%
Faculty training upon request	88.9%	88.1%	95.3%	91.0%	92.1%	72.9%
Activities for faculty who use technology	67.1%	79.9%	73.4%	61.7%	56.2%	56.3%

though in absolute terms they probably have far more classrooms with this capability than other types of institutions, the percentage of classrooms with wired connectivity is smaller. We found the same pattern for the percentage of classrooms with an installed computer, and the same explanation is probably appropriate. There are no differences in the percentages of classrooms that have wireless connectivity or that have computer projection, with about one-fifth and two-fifths of the classrooms having these capabilities, respectively. Having a television in a classroom is most common in associate's colleges and least common in doctoral institutions.

Faculty Support

If e-learning is going to become a reality in higher education, the extent of support for faculty to learn about and incorporate electronic capabilities into their courses will be a key factor in this transformation. Table 3-5 summarizes the data about a number of dimensions of faculty support, once again examining these across the Carnegie groups and showing differences associated with the nature of the campus.

The most common form of faculty support—and this is true across all Carnegie categories—is that of providing training programs for faculty. There is some variation across Carnegie class as to whether the most common training is in the form of scheduled sessions or conducted on request. This difference is probably due to the scale of operations, with smaller schools offering training more on request and doctoral institutions having both the capacity for scheduled sessions and volume of demand to prompt this approach.

In recent years there has been an emergence of instructional technology centers to assist faculty in their use of IT in teaching and learning. More than 87% of doctoral institutions reported having established such a center, which is a significantly higher percentage than the other groups. More than half of the baccalaureate campuses reported not having such a center. This same pattern holds for the question of whether the campus unit responsible for facul-

Table 3-6
Percentage of Students Reported To Be Using Their Own Computers

	All	DR	MA	BA	AA	Other
Mean	51.3%	67.9%	54.1%	72.1%	12.4%	30.0%
Median	60.0%	80.0%	60.0%	80.5%	2.0%	10.0%
Minimum	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%
Maximum	100%	100%	100%	100%	80.0%	100%

Table 3-7
Average Percentage of Students Using Their Own Computers by Institutional Control

	All	DR	MA	BA	AA	Other
Private Institutions	70.1%	83.7%	63.1%	76.2%	30.0%	47.1%
Public Institutions	37.7%	60.2%	44.7%	39.7%	11.6%	25.6%

ty teaching and learning excellence works with the IT unit on campus. Again, this is most common for doctoral institutions and least common for baccalaureate schools.

On average, at about half of all institutions instructional designers work with the IT unit in the development of course materials. However, once again we find this practice significantly more at doctoral institutions (73.1%) and significantly less at baccalaureate campuses (26.3%). About half of respondents in all Carnegie classes reported providing faculty with intensive support for using technology. About two-thirds of all campuses reported that they provide and support activities for faculty who use technology, with that percentage increasing with institutional complexity.

The least common form of faculty support is providing instructional technologists who are also discipline specialists, with only 17.6% of all campuses reporting such support structures overall. However, this percentage is 28.4% for doctoral institutions, where one also sees the greatest tendency towards decentralized support as reported in Section One of this monograph. Having IT support personnel who also understand the nuances of a given field can provide exceptional value to faculty, but this is probably a relative luxury and affordable only at institutions with greater resources.

Student Computing

The percentage of students using their own computers on campus varies as a function of Carnegie class, as shown in Table 3-6. Students are significantly more likely to have their own computers at a doctoral institution or a baccalaureate institution than the other categories, and least likely to have their own at an associate's college. While some of this difference can probably be attributed to the kinds of coursework demands that would require a computer, there may well be another factor working here. When the percentage of student ownership is examined in terms of institutional control—that is, public or private institutions—a very strong and statistically significant pattern emerges, as seen in Table 3-7. At private institutions, there is approximately a 20% greater level of student ownership than at public institutions within each Carnegie group. If a student is attending a private institution, there is some correlation with his or her relative affluence, even when financial aid is factored out, and hence there is probably greater means to afford the technology than for a student who is commuting from home to the nearby public institution. This finding, along with an intuitive awareness that a digital divide still persists on any campus, be it private or public, supports the premise that public access to equipment needs to continue to be offered or some students will be disadvantaged

Table 3-8
Policies on Student Computer Requirements

	All	DR	MA	BA	AA	Other
All students are provided a personal computer	3.5%	.7%	3.6%	8.3%	.0%	4.2%
Students in general required to buy/lease personal computers	3.5%	8.2%	2.4%	.0%	2.2%	5.2%
Students in some departments required to buy/lease PCs	12.1%	24.6%	6.5%	3.8%	19.1%	9.4%
PC buy/lease recommended but not required for all students	32.5%	36.6%	39.6%	48.1%	.0%	22.9%
PC buy/lease recommended but not required in some departments	6.9%	11.9%	8.3%	1.5%	1.1%	10.4%
No requirements or recommendations about PCs	41.4%	17.9%	39.6%	38.3%	77.5%	47.9%

in using technology effectively in the pursuit of their academic goals.

Campuses vary greatly as to their requirements and expectations regarding student access to technology, as shown in Table 3-8. A higher percentage of doctoral institutions reported having some form of requirement, with this level of expectation decreasing in masters and baccalaureate schools and significantly lower in associate's colleges, with 77% of the latter group having no such requirements or expectations.

About 7% of all responding campuses guarantee computer access for all students, either by providing them with a machine or by requiring the student to buy or lease a computer. However, very different patterns characterize these two methods of guaranteeing access. The practice of actually providing a computer to all students, and embedding this cost into the price of the program, is found more in baccalaureate institutions (8.3%) and somewhat at comprehensive colleges (3.6%) in comparison to other institutions. The practice of providing a computer to all students is virtually nonexistent in doctoral institutions or associate's colleges. It is interesting to note, however, that each of these practices was reported at all types of institutions, and by both public and private institutions, although there is a greater propensity for private institutions to require or recommend student ownership. About 8% of responding doctoral institutions require a student to purchase or lease a computer, with this practice less common in masters institutions and associate's colleges and completely nonexistent for baccalaureate campuses.

Overall, about one-third of all campuses recommend, but do not require, that all students have a computer. This is most common on baccalaureate campuses with nearly half having such a recommendation. The interesting finding here is that such a policy was not reported by a single associate's college responding to this survey.

An additional 12% of all campuses require that students in particular departments, disciplines, or courses of study have a computer. Again, we found very uneven patterns here, with about a quarter of all doctoral institu-

Table 3-9
High-Speed Network Connections Offered in Residence Halls

	All	DR	MA	BA	AA	Other
Yes	77.4%	99.3%	92.9%	95.5%	3.4%	63.5%
No	4.0%	.0%	1.8%	1.5%	11.2%	10.4%
No Residence Halls	18.5%	.7%	5.4%	3.0%	85.4%	26.0%

Table 3-10
Primary Technology of Network Connections in Residence Halls

	All	DR	MA	BA	AA	Other
Ethernet	94.2%	94.0%	93.6%	95.3%	100.0%	93.4%
Cable Modem	1.0%	.8%	1.9%	0%	0%	1.6%
DSL	.8%	1.5%	.6%	0%	0%	1.6%
Wireless	2.9%	3.0%	2.6%	3.9%	0%	1.6%

Table 3-11
Various Speeds of Residence-Hall Network Connections

	All	DR	MA	BA	AA	Other
10 Mbps	34.6%	37.6%	36.5%	24.4%	.0%	45.9%
10–11 Mbps	4.2%	3.0%	5.1%	4.7%	.0%	3.3%
10/100 Mbps	42.5%	45.1%	37.2%	51.2%	66.7%	31.1%
100 Mbps	16.5%	11.3%	18.6%	18.9%	33.3%	16.4%
>100 Mbps	2.3%	3.0%	2.6%	.8%	.0%	3.3%

tions having such requirements (most likely in engineering, technical, and business programs). Interestingly, this requirement was also reported by 19% of all responding associate's colleges. This approach is least common in baccalaureate institutions, consistent with the philosophy of a baccalaureate degree being a generalist curriculum, focusing on a liberal education, and not vocational preparation. In addition to these, about 7% of all campuses reported having a policy that recommends—but does not require—having a computer within given departments, with this pattern being most common at doctoral and masters institutions.

Another dimension of student computing addressed by the survey is the level of support provided in the residence halls that house undergraduate students. See Table 3-9. More than 92% of all BA, MA, and DR institutions reported providing high-speed network access in the residence halls, while only 63.5% of "other" schools did so. Only 3.4% of associate's colleges reported having this service but this number is distorted because 85.4% of schools in this group reported not having residence halls. Even so, of the nearly 15% of associate's schools with residence halls, fewer than a quarter of these reported providing high-speed access.

Nearly all schools, regardless of Carnegie class, use Ethernet connections (see Table 3-10). The speeds of connectivity reported are also consistent across types of schools, as seen in Table 3-11.

Course Management Systems

A final discussion about student and faculty computing relates to the use of course management systems. The analysis here focuses on use and patterns of deployment, while a dis-

Table 3-12
Course Management System Practices

	All	DR	MA	BA	AA	Other
Not deployed and no plans to deploy	3.5%	.7%	2.4%	6.0%	1.1%	8.3%
Planning to deploy one CMS or more	4.3%	2.2%	2.4%	10.5%	1.1%	5.2%
Support a single commercial CMS	64.3%	56.0%	75.1%	66.2%	74.2%	44.8%
Support more than one commercial CMS	9.3%	15.7%	6.5%	3.8%	11.2%	11.5%
Support a single homegrown CMS	5.2%	5.2%	5.3%	3.0%	.0%	12.5%
Support more than one homegrown CMS	.6%	.7%	.0%	.0%	.0%	3.1%
Employ a hybrid approach (homegrown and commercial)	10.1%	17.9%	4.7%	6.0%	10.1%	14.6%

Table 3-13
Faculty Use of a Course Management System

	All	DR	MA	BA	AA	Other
Employed for all or nearly all courses	12.6%	11.9%	13.0%	8.3%	11.2%	19.8%
Used selectively by faculty	80.0%	85.8%	81.7%	77.4%	87.6%	65.6%
Faculty do not use course management systems	7.4%	2.2%	5.3%	14.3%	1.1%	14.6%

cussion of the actual systems in use can be found in Section Five of this monograph. As illustrated in Table 3-12, over 90% of all campuses are using a course management system. Only 3.5% of all responding campuses have not deployed such a system and do not have plans to do so, with 4.3% planning to deploy a course management system but not having yet begun. About two-thirds of all responding campuses have implemented and support a single commercial course management system, with another 5.2% supporting a single homegrown system, while 9.3% support multiple commercial systems. More doctoral institutions reported supporting multiple systems than any other Carnegie group. Finally, an additional 10.1% use both homegrown and commercial systems, with doctoral institutions again most frequently employing this approach.

Finally, we examined the nature and extent of faculty use of course management systems, as shown in Table 3-13. At the vast majority of campuses, faculty members use these systems selectively. It is worth noting that associate's colleges reported significantly higher use than all other groups, with only 1.1% of schools in this classification reporting that faculty do not use such systems. More than 12% of all responding campuses reported that these systems are employed for all or nearly all courses.

FOUR

Networking and Security

The fourth section of the core data survey focused on networking, methods of remote access, bandwidth shaping, videoconferencing capabilities on campus, deployment of new technologies, and practices related to network security.

Network Speed and Shaping

The core data survey requested data about the bandwidth available from a campus to the commodity Internet and to high-speed networks. Table 4-1 shows the distinct patterns that characterize bandwidth availability to the Internet by Carnegie groups for responding institutions, with the greatest access reported (not surprisingly) by doctoral institutions and the least by AA and BA institutions.

Looking at access to high-speed networks, Table 4-2 shows that the greatest access was reported by doctoral institutions, most likely due to the large data sets, visualization, and other applications needed by faculty at such institutions for their academic work. About three-fourths of the AA, BA, and MA institutions responding to our survey provide no access whatsoever to such networks.

Shaping bandwidth refers to adjusting parameters on the campus Internet connection to limit use through various means, such as type of connection, location of connection, direction of traffic, time of day, or other specific characteristics. A campus may choose to shape bandwidth to ensure that the downloading of large files does not interfere with the basic operational needs of the campus and that the bandwidth is available when faculty and students need it for their academic work.

Table 4-1
Total Bandwidth Available to the Commodity Internet from Campus

	All	DR	MA	BA	AA	Other
0 Mbps	0.5%	0.0%	1.2%	0.8%	0.0%	0.0%
More than 0–4.5 Mbps	28.5%	1.5%	27.2%	43.6%	48.3%	29.2%
4.6–12 Mbps	20.9%	3.0%	25.4%	36.8%	25.8%	11.5%
12.1–44 Mbps	16.4%	15.7%	18.3%	9.0%	12.4%	28.1%
45–89 Mbps	15.1%	31.3%	15.4%	8.3%	6.7%	9.4%
90–154 Mbps	5.8%	11.9%	3.6%	0.8%	5.6%	8.3%
155–299 Mbps	7.2%	20.9%	6.5%	0.8%	1.1%	4.2%
300–999 Mbps	2.3%	8.2%	1.2%	0.0%	0.0%	1.0%
1,000 Mbps or more	3.2%	7.5%	1.2%	0.0%	0.0%	8.3%

Table 4-2
Total Bandwidth Available to High Performance Networks from Campus

	All	DR	MA	BA	AA	Other
0 Mbps	56.8%	11.9%	71.6%	82.7%	74.2%	41.7%
More than 0–4.5 Mbps	4.8%	0.0%	5.9%	5.3%	10.1%	4.2%
4.6–12 Mbps	4.0%	2.2%	1.8%	5.3%	6.7%	6.3%
12.1–44 Mbps	3.9%	1.5%	3.6%	0.0%	3.4%	13.5%
45–89 Mbps	8.9%	22.4%	7.1%	6.0%	2.2%	3.1%
90–154 Mbps	2.9%	6.7%	2.4%	0.0%	3.4%	2.1%
155–299 Mbps	8.2%	28.4%	5.3%	0.8%	0.0%	3.1%
300–999 Mbps	4.7%	17.9%	1.2%	0.0%	0.0%	3.1%
1,000 Mbps or more	5.8%	9.0%	1.2%	0.0%	0.0%	22.9%

Table 4-3
Methods and Use of Bandwidth Shaping

	All	DR	MA	BA	AA	Other
Only track bandwidth utilization	29.3%	17.2%	29.6%	12.0%	52.8%	47.9%
Shape by time of day	24.2%	20.1%	31.4%	39.1%	5.6%	13.5%
Shape by location on campus	39.1%	65.7%	43.8%	44.4%	5.6%	17.7%
Shape by type of traffic	60.4%	72.4%	74.0%	76.7%	15.7%	38.5%
Shape by direction	40.3%	56.0%	41.4%	57.1%	9.0%	21.9%
Do not track or shape	9.8%	2.2%	4.1%	9.8%	30.3%	11.5%

As seen in Table 4-3, about 10% of all campuses report not shaping bandwidth at all, but this level is elevated by the high percentage of associate's colleges (nearly one-third) reporting no bandwidth shaping practices. More than half of these colleges also reported only tracking use without any other shaping strategies. The most popular strategy is shaping by the type of network traffic, with AA institutions nonetheless using this strategy far less than doctoral, masters, or baccalaureate institutions.

The second most common strategy is shaping by direction on the Internet, that is, filtering to differentiate between data and traffic that flow from the campus to the Internet versus from the Internet to the campus. Doctoral and baccalaureate institutions use this strategy to the greatest extent. Shaping bandwidth by location (for example, shaping only for residence halls) is the next most common approach, with doctoral and baccalaureate campuses doing this the most and associate's colleges the least. The next most frequently reported strategy is shaping by the time of day, which is used most by baccalaureate school respondents.

Remote and Wireless Access

Providing remote access to the Internet and to campus networks is critical to serving faculty and students who live off campus. The survey asked about six commonly used methods of providing such access to four constituencies: faculty, students, staff, and alumni. Providing access to faculty via an internal modem pool, the strategy employed by more than 60% of all responding campuses, is the most common method employed. Internal modem pool access, however, is differentially employed for

Table 4-4
Level of Remote Access Provided via an Internal Modem Pool to Various Constituencies

	All	DR	MA	BA	AA	Other
Faculty	61.5%	80.6%	57.4%	63.9%	44.9%	54.2%
Students	45.9%	73.9%	46.2%	44.4%	15.7%	36.5%
Staff	64.4%	80.6%	61.5%	66.2%	49.4%	58.3%
Alumni	6.9%	7.5%	6.5%	9.0%	3.4%	7.3%
Not provided	34.1%	17.9%	37.9%	31.6%	49.4%	39.6%

Table 4-5
Number of Campus Sites from Which Interactive Videoconferencing Can Be Initiated

	All	DR	MA	BA	AA	Other
0	28.3%	9.0%	26.6%	48.9%	30.3%	28.1%
1	15.0%	6.0%	16.6%	24.8%	10.1%	15.6%
2	12.1%	6.7%	13.0%	13.5%	20.2%	8.3%
3	9.2%	6.7%	9.5%	3.8%	16.9%	12.5%
4–5	10.6%	14.9%	13.6%	3.8%	10.1%	9.4%
6–10	12.7%	20.1%	14.2%	4.5%	9.0%	14.6%
11–20	6.9%	17.2%	5.9%	0.8%	1.1%	8.3%
More than 20	5.2%	19.4%	0.6%	0.0%	2.2%	3.1%

various constituencies, as shown in Table 4-4, with the greatest access provided to faculty and staff and significantly less to students. Only about 7% of respondents make such access available to alumni.

Only about 5% of campuses reported providing access by an outsourced modem pool, and there are no differences in the frequency of such offerings across types of campuses. Approximately 20% provide access via ISPs with an institutionally arranged discount, while only about 10% of campuses provide subsidized ISP accounts.

The growth of wireless network access on campuses is striking. The core data survey captured detailed data (far too great to include in this summary report) about the extent of penetration of wireless into seven areas of the campus: classrooms, libraries, open spaces, research facilities, administrative offices, public laboratories, and residence halls. In general, there is wide variation as to the level of deployment of wireless across these categories and across the Carnegie groups. Overall, the highest level of penetration is found in libraries, with a third of all campuses having three-quarters to 100% of their libraries providing wireless access. Doctoral institutions have incorporated wireless technology into classrooms and public spaces to a greater extent than other Carnegie classes. Wireless access is least available in residence halls and research facilities overall.

Videoconferencing Capabilities

Videoconferencing capabilities were reported by all campus types, but about one-fourth of all responding campuses do not have a single site (not including desktop videoconferencing) from which interactive conferences can be initiated, with that being true for nearly half of the BA institutions. In addition, the level of penetration varied immensely by Carnegie class, as seen in Table 4-5. Doctoral institutions have the greatest availability of these facilities, with about 20% of universities in this category having more than 20 such sites.

In addition to central sites for videoconfer-

Table 4-6
Number of Desktops That Can Deploy Desktop Videoconferencing

	All	DR	MA	BA	AA	Other
0	42.0%	9.0%	45.6%	66.9%	50.6%	39.6%
1–5	13.4%	4.5%	17.2%	15.0%	20.2%	10.4%
6–10	8.5%	8.2%	9.5%	6.0%	13.5%	6.3%
11–25	8.7%	11.2%	10.7%	4.5%	5.6%	10.4%
26–100	10.6%	25.4%	5.3%	3.0%	2.2%	17.7%
101–1,000	9.0%	15.7%	7.1%	4.5%	7.9%	10.4%
More than 1,000	7.7%	26.1%	4.7%	0.0%	0.0%	5.2%

Table 4-7
Status of Voice-over-IP Technology

	All	DR	MA	BA	AA	Other
Deployed	13.2%	17.2%	10.1%	7.5%	16.9%	17.7%
Piloting	18.7%	41.0%	13.0%	6.8%	9.0%	22.9%
In progress	4.7%	3.7%	4.7%	1.5%	11.2%	4.2%
Considering	40.6%	32.1%	46.2%	48.1%	31.5%	40.6%
Not planned	22.9%	6.0%	26.0%	36.1%	31.5%	14.6%

Table 4-8
Status of Video-over-IP Technology

	All	DR	MA	BA	AA	Other
Deployed	29.8%	56.0%	24.9%	12.0%	34.8%	21.9%
Piloting	10.6%	17.2%	7.1%	6.8%	7.9%	15.6%
In progress	9.3%	11.9%	9.5%	5.3%	7.9%	12.5%
Considering	31.7%	10.4%	41.4%	37.6%	34.8%	33.3%
Not planned	18.5%	4.5%	17.2%	38.3%	14.6%	16.7%

encing, respondents were asked about the number of desktops that could deploy videoconferencing. The same pattern was found as with central sites, with doctoral institutions having the most such capability, followed by "Other" and MA institutions. More than a quarter of the doctoral institutions have over a thousand machines with this capability. As seen in Table 4-6, two-thirds of BA schools do not have a single machine with such capability.

Deployment of New Technologies

The core data survey explored the level of deployment of seven new technologies that are currently hot topics of conversation within the higher education IT community. Data for these technologies are presented in Tables 4-7 through 4-13.

As shown in Table 4-7, voice-over-IP (VoIP) technology is being fully deployed at about 13% of campuses, with the highest level in doctoral institutions and the lowest in baccalaureate institutions. Nearly 23% of all responding campuses reported no plans for this technology, with this being especially the case for baccalaureate and AA institutions and least so for doctoral campuses.

Video-over-IP technology is employed to a

Table 4-9
Status of PKI Technology

	All	DR	MA	BA	AA	Other
Deployed	12.1%	10.4%	12.4%	9.8%	20.2%	9.4%
Piloting	4.8%	11.9%	3.6%	1.5%	1.1%	5.2%
In progress	6.3%	9.7%	4.1%	3.8%	9.0%	6.3%
Considering	36.6%	51.5%	37.3%	28.6%	16.9%	43.8%
Not planned	40.3%	16.4%	42.6%	56.4%	52.8%	35.4%

Table 4-10
Status of LDAP Technology

	All	DR	MA	BA	AA	Other
Deployed	53.9%	75.4%	47.3%	40.6%	51.7%	56.3%
Piloting	5.0%	4.5%	6.5%	3.0%	4.5%	6.3%
In progress	15.5%	14.9%	17.8%	14.3%	12.4%	16.7%
Considering	14.2%	4.5%	18.3%	20.3%	13.5%	12.5%
Not planned	11.4%	0.7%	10.1%	21.8%	18.0%	8.3%

Table 4-11
Status of Biometric Technology

	All	DR	MA	BA	AA	Other
Deployed	1.1%	4.5%	0.6%	0.0%	0.0%	0.0%
Piloting	2.9%	5.2%	4.1%	0.0%	2.2%	2.1%
In progress	1.4%	1.5%	1.8%	0.8%	2.2%	1.0%
Considering	16.1%	25.4%	14.8%	11.3%	12.4%	15.6%
Not planned	78.4%	63.4%	78.7%	88.0%	83.1%	81.3%

Table 4-12
Status of Smart Card Technology

	All	DR	MA	BA	AA	Other
Deployed	15.8%	24.6%	18.3%	12.8%	3.4%	14.6%
Piloting	2.6%	4.5%	2.4%	1.5%	0.0%	4.2%
In progress	4.8%	3.0%	4.7%	5.3%	4.5%	7.3%
Considering	34.9%	29.9%	38.5%	32.3%	34.8%	39.6%
Not planned	41.9%	38.1%	36.1%	48.1%	57.3%	34.4%

much higher extent than voice over IP, as shown in Table 4-8. About 30% of all campuses reported using this technology, but, again, this is most true for doctoral institutions and least true for baccalaureate institutions. AA schools are second highest in reporting using this advanced technology, probably in large part due to their innovative use of technology in teaching and learning.

The use of public key infrastructure (PKI) is

Table 4-13
Status of Web Services Technology

	All	DR	MA	BA	AA	Other
Deployed	57.2%	77.6%	60.4%	44.4%	50.6%	46.9%
Piloting	2.9%	3.0%	3.0%	1.5%	1.1%	6.3%
In progress	12.9%	6.7%	14.8%	19.5%	11.2%	10.4%
Considering	17.1%	12.7%	14.2%	15.8%	19.1%	28.1%
Not planned	10.0%	0.0%	7.7%	18.8%	18.0%	8.3%

Table 4-14
Characteristics of Firewalls on Campus

	All	DR	MA	BA	AA	Other
Firewall at external Internet connection	77.6%	50.7%	83.4%	86.5%	91.0%	80.2%
Firewalls around certain high-security servers or networks	48.6%	75.4%	45.0%	31.6%	33.7%	55.2%
Firewalls deployed by or on behalf of individual departments	26.7%	67.2%	17.8%	7.5%	6.7%	31.3%
Requirement that all clients use personal firewalls	0.5%	1.5%	0.6%	0.0%	0.0%	0.0%
No firewalls	4.7%	4.5%	4.7%	6.8%	3.4%	3.1%

interesting to note, as this technology may well be critical in the deployment of campus security policies and practices. As seen in Table 4-9, deployment of PKI is still in the early stages of diffusion, despite the amount of campus discussion and numbers of conference presentations on this topic. As one would expect, doctoral institutions are furthest along with this deployment, but second are AA institutions, although a large percentage of campuses in this Carnegie class indicate that they are not planning such an implementation. It will be interesting to watch the trend line on this technology when next year's core data are released.

One indicator of the potential trend line for PKI is the current level of deployment of Light Directory Application Protocol, or LDAP. Such a directory is essential for the authentication and authorization efforts required in PKI, and over half of all campuses currently have LDAP deployed, as shown in Table 4-10. There are significant differences with this technology deployment, with more than 75% of doctoral institutions having LDAP deployed, while only 40% of baccalaureate institutions have deployed this technology.

There is virtually no deployment of biometric technology, which includes use of fingerprints, retinal scans, or other physiological means of user identification for security purposes. About 80% of all responding campuses are not even planning for this technology (see Table 4-11).

As shown in Table 4-12, the deployment of smart cards is most prevalent at doctoral institutions and reported least by AA institutions. The overall level of penetration is less than one might have expected, with only about 16% of all responding institutions reporting

Table 4-15
Practices Regarding Security-Related Software Patches and Updates

	All	DR	MA	BA	AA	Other
All critical systems expeditiously patched or updated	82.1%	76.9%	84.0%	79.7%	86.5%	85.4%
Some critical systems expeditiously patched or updated	15.9%	17.2%	16.0%	18.0%	11.2%	15.6%
Computers connected to network have security holes fixed	47.3%	44.8%	47.9%	36.1%	68.5%	45.8%
Proactive scans in critical systems	56.0%	70.9%	53.3%	48.1%	48.3%	58.3%
Proactive scans in computers connected to network	31.7%	44.0%	27.8%	18.0%	29.2%	42.7%
Security system includes intrusion detection system	38.5%	59.0%	43.2%	18.0%	23.6%	43.8%

deployment of smart card technology and more than 40% reporting it is not planned.

The final emerging technology analyzed is the use of Web services as a set of tools and building blocks for system development. As shown in Table 4-13, with over half of all campuses deploying Web services, this is the most commonly adopted of the seven technologies examined. It is worth noting that not a single doctoral campus reported not planning to use Web services.

Security

The final area of analysis is security, including the processes being used to secure campuses from disruptions of service, incursions, and other security breaches. Perhaps the most common type of security protection being used by responding campuses is a firewall. Experience has shown that a single firewall is not adequate to provide security, however, as many of the individuals who provide a threat to security are students and personnel who work and operate within the environment protected by the firewall. Table 4-14 shows various strategies currently being employed and their relative frequency within each of the Carnegie groupings.

Overall, fewer than 5% of all campuses have no firewalls, with the most common strategy for all responding institutions being the deployment of a firewall at the external Internet connection. This is true for a very large percentage of all campuses other than doctoral institutions, which more often reported deploying firewalls around high-security servers and by or for individual departments. There was virtually no use of or requirement for personal firewalls irrespective of Carnegie group.

Table 4-15 shows the patterns and use of software patches and other practices to ensure security on campus. Far and away the most common practice is to expeditiously patch or update critical systems, with this being reported by about 82% of all campuses and no differences found between Carnegie groups. The second most common practice is conducting scans of the network on critical systems, with this occurring for more than half of all campuses and somewhat more frequently at doctoral institutions. Fixing the security of machines connected to the network is the next most common strategy, with nearly half of all

Table 4-16
Security Policy Advisory Participants

	All	DR	MA	BA	AA	Other
IT Policy/Security Officer	58.6%	76.1%	52.7%	39.8%	61.8%	67.7%
Central IT Organization	93.9%	98.5%	95.9%	91.7%	89.9%	90.6%
Auditor	39.9%	64.9%	39.1%	21.1%	27.0%	44.8%
General Counsel	49.6%	85.8%	49.1%	27.1%	36.0%	43.8%
Board of Trustees	11.3%	15.7%	13.0%	9.8%	9.0%	6.3%
Chief Financial Officer	42.7%	47.0%	49.7%	36.8%	40.4%	34.4%
Chief Academic Officer	46.7%	55.2%	55.6%	39.8%	42.7%	32.3%
President's Cabinet	54.1%	52.2%	66.3%	45.9%	66.3%	35.4%
Campus Task Force	31.4%	53.0%	27.2%	20.3%	34.8%	20.8%
State Agency/System Office	18.8%	21.6%	26.6%	3.0%	38.2%	5.2%
No Policy Development	1.3%	0.0%	0.0%	3.0%	2.2%	2.1%

institutions reporting this practice. The use of security intrusion detection systems is the next most common approach, but this method is used far more at doctoral institutions and much less at baccalaureate and AA schools. The conducting of scans on individual computers on the network is the second least used method, with the selective patching of critical systems the least used approach.

Finally, respondents were asked to identify the participants in policy development related to security on campus. As shown in Table 4-16, the patterns of involvement and the breadth of participation in such policy efforts varied dramatically across Carnegie types. In all cases, the central IT organization was the most common participant in such processes, with about 94% of all campuses checking this group and no differences between Carnegie classes. However, commonality of the policy-making process ends there. A significantly higher percentage of doctoral institutions than other types of schools reported involvement of the IT policy/security officer, the university counsel, the auditor, and a campus task force. Fewer baccalaureate institutions reported engaging any of these participants than any of the other types of schools.

FIVE

Information Systems

Since colleges and universities began to prepare for Y2K toward the end of the last decade, administrative systems have become a major focus of campus information technology units, in many cases after years of neglect. The need to support better campus decision support systems with an integrated view of data has also become important. Systems that support enterprise resource planning (commonly called ERPs) have taken on a significant role in campus IT strategies.

In this section, we examine ERP systems and the sources of costs associated with them, along with methods of implementing such information systems. In particular, seven of the most commonly used campus information systems are explored from the perspective of their age, most common vendors, replacement plans, and so forth.

ERP Systems

ERP systems are a major focus, as well as a concern, on many campuses; the challenges associated with such systems have been the top-ranked issue in the EDUCAUSE Current Issues Survey in two of the last three years and second-ranked in the third.[1] These systems are becoming a standard, but the cost and complexity of their implementation continues to be an issue.

As seen in Table 5-1, the majority of all CDS survey respondents either have implemented or are in the process of implementing an ERP, with fewer than a quarter reporting no plans to do so. The level of implementation is essentially the same for doctoral, master's, and baccalaureate institutions, but is significantly lower for associate's colleges and institutions in the "Other" category.

Table 5-1
ERP Project Completed, In Process, or Planned

	All	DR	MA	BA	AA	Other
Implementation completed	36.6%	34.3%	34.3%	45.1%	30.3%	37.5%
Implementation in process	22.5%	31.3%	25.4%	18.8%	21.3%	11.5%
RFP stage	3.9%	6.0%	3.0%	4.5%	4.5%	1.0%
Considering	13.5%	11.9%	16.6%	8.3%	16.9%	14.6%
No plans	23.5%	16.4%	20.7%	23.3%	27.0%	35.4%

Table 5-2
Average Percentage of the Total Cost of the ERP by Area of Expenditure

	All	DR	MA	BA	AA	Other
Software and Licenses	24.8%	17.4%	25.1%	33.8%	22.4%	24.7%
Software Maintenance	10.9%	7.2%	11.3%	13.9%	11.0%	11.8%
Training	8.4%	6.0%	8.9%	11.0%	8.0%	7.6%
In-house Staff Costs	20.1%	24.2%	18.3%	16.2%	24.2%	18.5%
Consulting Fees	19.1%	28.3%	19.5%	11.0%	12.3%	23.2%
Hardware	12.4%	12.2%	12.4%	11.4%	13.9%	13.0%
Other	4.3%	4.8%	4.5%	2.7%	8.2%	1.2%

Table 5-2 shows the percentage of overall ERP costs spent on various elements of the project. Doctoral institutions spend the least on software and software maintenance, but this may well be an artifact of their much larger spending on consulting fees. Doctoral institutions also spend a notable proportion on in-house staff costs, which in combination with their higher percentage of consulting costs reflects the substantial personnel commitment required to implement such systems at large, complex institutions. Baccalaureate schools are spending a significantly larger percentage of total ERP costs on training. The percentage spent on hardware and other expenses is constant across institutional types.

Information Systems Analysis

The survey requested information about methods of developing and implementing information systems in general, including the types of system modifications campuses make. Respondents were asked to provide data about seven common information systems that are found on all types of college campuses. Data are presented for these seven systems with respect to their age, plans for replacement, whether they are provided at the system or district level for schools that are part of a multi-campus system, and the most common vendors for purchased systems.

To avoid repeating the same discussion for each of the seven systems, several key points and aspects of the methodology used need to be addressed here. In looking at the data about the age of the systems, there is a relatively large difference between the mean and the median when examining the year of implementation of the various systems. The mean, which is a statistical average, is almost inevitably lower than the median, which is the year for which there are an equal number of responses greater than that value and lower than that value. The mean being lower than the median is the result of a significantly greater number of respondents reporting earlier years, thereby reducing this value. This is likely because of legacy systems that may date back to the late 1970s or early 1980s. This finding should be considered as the various strategies of implementation are discussed, with specific attention to the strategy to enhance older legacy systems with Web-based front ends.

Also, a word of explanation concerning the data captured about specific system vendors is warranted. In the section below describing the seven types of information systems, a table is included for each of the systems in which we have listed the vendors, in descending order, who were named by 5% or more of respondents for that system. Note that these vendors are categorized generically, not by individual product. Thus there may be several products that have been combined for a single vendor, or in the case of acquisitions, several companies may be incorporated under the company that acquired these firms. For example, if a campus is using a Quodata product, it is reflected in the percentage for Jenzabar because Quodata was acquired by Jenzabar.

In the actual data available through the online database service to those who completed

Table 5-3
Strategies for Acquiring Information Systems

	All	DR	MA	BA	AA	Other
Develop systems in-house	52.2%	64.9%	49.7%	33.1%	57.3%	60.4%
Develop systems in partnership with a vendor	30.4%	37.3%	30.8%	15.0%	34.8%	37.5%
Purchase a commercial product without customization	58.9%	67.9%	56.8%	54.9%	56.2%	58.3%
Purchase a commercial product and customize	69.2%	76.9%	69.8%	66.9%	55.1%	74.0%
Buy best-of-breed applications	37.8%	47.0%	39.1%	27.8%	27.0%	46.9%
Buy a package of integrated systems	53.5%	54.5%	60.9%	60.2%	40.4%	41.7%
Enhance legacy systems and provide Web interfaces	44.4%	60.4%	42.6%	30.8%	46.1%	42.7%
Outsource administrative systems	7.9%	5.2%	7.7%	8.3%	12.4%	7.3%

the core data survey, both these aggregate listings, as well as the specific individual product names, are available. For purposes of simplicity this report shows only the aggregate (normalized) data. Since vendors with less than a 5% share are not listed, the totals do not equal 100%. The actual total percentage for the applicable vendors is shown to help the reader understand the relative presence of these vendors within a given segment of the higher education community, based on data reported by respondents to the core data survey. Note that EDUCAUSE does not present these data as evidence of market share or vendor dominance.

In all seven of the systems, if a campus developed its own system, this is shown in the category of "homegrown," giving the reader a sense of what types of institutions are opting for this kind of strategy. Homegrown solutions are included in the analyses if this approach exceeded 5% for that institutional type.

System Implementation Strategies

Through the years, there have long been vigorous discussions about the appropriateness of building versus buying administrative systems. A recent ECAR study found that modification of the basic vendor code was the single most important factor related to budget overruns, and yet these modifications might be necessary to achieve the goals of a given campus.[2] Table 5-3 presents commonly used methods of implementing systems. The respondents to the survey were allowed to check more than one method, so these do not sum to 100%. Some findings with regard to implementation strategies include the following:

- Developing systems in-house with existing IT staff is most common among doctoral institutions and significantly lower than all other categories for baccalaureate institutions. This is undoubtedly due to the differences in size of the IT staff (as illustrated in Section One of this report), with large staffs in doctoral institutions and relatively small staffs in baccalaureate institutions.

Table 5-4
Method and Extent of Modification of Commercial Packages

	All	DR	MA	BA	AA	Other
Modify underlying code	29.3%	41.8%	26.0%	28.6%	24.7%	22.9%
Modify configuration	59.8%	69.2%	59.8%	53.4%	49.4%	65.6%
Modify external modules	57.3%	77.6%	56.8%	45.9%	42.7%	59.4%
Other	2.6%	3.7%	3.0%	0.8%	3.4%	2.1%
Do not buy and modify	23.2%	14.2%	21.3%	29.3%	34.8%	19.8%

- Developing systems in partnership with a vendor is the least common of the major methods and one that is used significantly less at baccalaureate institutions.

- The strategy of buying a package and implementing it without any modification is the second most common strategy, used significantly more at doctoral institutions than at schools in the other categories. (This also is true of selecting best-of-breed applications but, again, since multiple responses were allowed and doctoral institutions probably have more general systems than other types of institutions, this is probably not all that noteworthy.)

- Purchasing a system and customizing it is the most common strategy, with two-thirds of all types of institutions using this strategy except for associate's colleges.

- The strategy of buying a package of integrated systems is clearly a preferred method for masters and baccalaureate institutions, although least used by associate's colleges and "Other" schools. This is consistent with the previous discussion about use of ERPs.

- Data show that the strategy of enhancing legacy systems is used significantly more at doctoral institutions, consistent with the findings about the average age of systems presented later in this section. (Doctoral institutions overall have older systems, having likely decided to continue to patch and enhance these systems with more friendly Web-based front ends, keeping them going rather than replacing them.)

- Finally, the strategy of outsourcing administrative systems is not particularly common to any of the Carnegie groups, but it is used significantly more at associate's colleges.

Modifying systems is a more commonly used strategy at all types of campuses than might have been expected. It is important, therefore, to understand if there are any differences in the kind of modifications being made. Table 5-4 shows that more doctoral institutions modify the underlying code of administrative systems than all other groups. The most common method of modification among those who buy and modify software is modification of the system configuration, and there are no significant differences among campus types when looking at this subset. In terms of modifying external modules, doctoral institutions, once again, do far more of this than any other Carnegie group. The strategy of buying a package and not modifying it at all is far less common than might have been expected, with this strategy being used less than one-fourth of the time when all campuses are considered. Not modifying a system is an approach used more than one-third of the time at associate's colleges, followed closely by baccalaureate institutions. Again, this probably somewhat reflects staff levels and the ability of these schools to undertake such projects.

Seven Types of Information Systems

The survey requested data about seven basic information systems that are probably

Table 5-5
Percentage of Institutions Having Various Major Information Systems

	All	DR	MA	BA	AA	Other
Student Information System	99.0%	100.0%	99.4%	99.2%	95.5%	100.0%
Financial Information System	98.7%	100.0%	98.8%	99.2%	95.5%	99.0%
Human Resources System	91.5%	100.0%	94.1%	81.2%	91.0%	89.6%
Development System	77.9%	86.6%	87.0%	92.5%	44.9%	60.4%
Library Information System	88.7%	88.1%	89.3%	88.7%	86.5%	90.6%
Course Management System	91.8%	95.5%	93.5%	86.5%	95.5%	87.5%
Grant Management System	40.6%	79.1%	32.0%	19.5%	16.9%	53.1%

the most common on college and university campuses. Table 5-5 presents the average percentage of each Carnegie class for each type of system. As is evident from the table:

- Virtually all campuses have student information systems and financial information systems in place, and there are no significant differences among groups.
- Human resources systems are very common across all groups, but fewer baccalaureate institutions have these than the other groups.
- Associate's colleges employ development systems significantly less than other types of institutions.
- Library systems are nearly ubiquitous, and no significant differences were found among groups.
- Course management systems are also extremely common, but baccalaureate institutions have a significantly lower usage of such systems than the other Carnegie classes.
- We see a range of use of grants management systems, with doctoral institutions having the highest use followed by master's institutions, and baccalaureate and associate's colleges having a relatively low level of deployment of these systems. Because of the highly heterogeneous set of institutions in the "Other" category, the percentage falls in the middle of the range. All of this is fairly predictable, in that the use of grants management systems directly correlates with the research mission of the campus, and the data reflect that pattern.

With this overview of the use of such systems in mind, a brief discussion of the findings for each type of system follows.

Student Information Systems

In examining student information systems, it is interesting to note that these systems are the oldest of any of the seven systems. And looking at the data for all of the systems for all Carnegie groups, the oldest systems reported by any group are the student systems reported by doctoral institutions (see Table 5-6). The age of such systems for these institutions is about 12 years, reflecting the difficulty in changing this absolutely mission-critical system and perhaps explaining the pattern of maintaining them rather than switching to another system. However, as seen in Table 5-7, nearly 40% of these campuses expect to implement a new stu-

Table 5-6
Year of Implementation for Various Major Information Systems

	All	DR	MA	BA	AA	Other
Student System						
Mean	1993.5	1991.1	1993.0	1994.6	1994.3	1995.9
Median	1995.0	1991.5	1995.0	1996.0	1997.0	1998.0
Financial System						
Mean	1994.2	1992.1	1993.8	1994.9	1995.7	1995.4
Median	1996.0	1994.0	1995.0	1997.0	1997.0	1996.5
HR System						
Mean	1995.8	1994.6	1995.2	1996.8	1996.5	1996.6
Median	1998.0	1997.5	1998.0	1998.0	1998.0	1998.0
Development System						
Mean	1995.4	1994.5	1995.6	1995.5	1996.8	1995.6
Median	1997.0	1996.0	1997.0	1997.0	1998.0	1996.5
Library System						
Mean	1995.5	1994.9	1995.4	1995.9	1995.0	1996.6
Median	1997.0	1997.0	1996.0	1996.0	1995.0	1998.0
Course Management						
Mean	1999.4	1998.3	1999.7	2000.2	1999.6	1999.4
Median	2000.0	1999.0	2000.0	2000.0	2000.0	2000.0
Grants Management						
Mean	1996.6	1995.3	1997.1	1997.8	1996.3	1998.2
Median	1999.0	1997.0	2000.0	2000.0	1998.0	2000.0

Table 5-7
Percentage of Campuses Expecting to Implement a New System in the Next Three Years

	All	DR	MA	BA	AA	Other
Student Information System	27.5%	38.1%	32.5%	19.5%	19.1%	22.9%
Financial Information System	20.1%	29.1%	24.3%	16.5%	10.1%	14.6%
Human Resources System	18.2%	25.4%	23.7%	11.3%	9.0%	16.7%
Development System	15.1%	20.1%	20.1%	12.0%	7.9%	10.4%
Library System	15.1%	9.0%	16.0%	20.3%	19.1%	11.5%
Course Management System	13.0%	11.9%	14.2%	9.0%	14.6%	16.7%
Grants Management System	12.6%	29.9%	9.5%	3.8%	4.5%	13.5%

dent system in the next three years. Doctoral and master's institutions are significantly more likely than institutions in the other categories to change to a new system in the next three years.

A fairly consistent and relatively low percentage of schools have student systems provided at the system or district level, but more than half of all associate's colleges have such an arrangement (see Table 5-8). This is not surprising given that the vast majority of these schools

Table 5-8
Percentage of Various Information Systems Provided at the System/District Level

	All	DR	MA	BA	AA	Other
Student Information System	18.4%	15.7%	13.6%	10.5%	51.7%	10.4%
Financial Information System	22.5%	17.9%	23.7%	11.3%	56.2%	11.5%
Human Resources System	22.4%	18.7%	24.9%	9.8%	55.1%	10.4%
Development System	7.1%	9.0%	5.9%	4.5%	13.5%	4.2%
Library System	20.5%	12.7%	18.3%	14.3%	53.9%	12.5%
Course Management System	10.3%	7.5%	7.7%	7.5%	28.1%	6.3%
Grants Management System	6.0%	10.4%	6.5%	2.3%	4.5%	5.2%

Table 5-9
Most Common Student Information System Vendors

All Institutions	
Vendor	**Percentage**
SCT	29.1%
Homegrown	20.3%
Datatel	14.1%
Jenzabar	13.2%
PeopleSoft	8.5%
Total	**85.2%**
Doctoral Institutions	
Vendor	**Percentage**
SCT	35.1%
Homegrown	31.3%
PeopleSoft	17.2%
IA	5.2%
Total	**88.8%**
MA Institutions	
Vendor	**Percentage**
SCT	39.9%
Jenzabar	16.7%
Datatel	15.5%
Homegrown	14.9%
PeopleSoft	6.0%
Total	**93.0%**

BA Institutions	
Vendor	**Percentage**
Jenzabar	32.6%
Datatel	22.7%
SCT	22.7%
Homegrown	6.8%
Total	**84.8%**
AA Institutions	
Vendor	**Percentage**
Homegrown	29.4%
Datatel	21.2%
SCT	20.0%
Total	**70.6%**
Other Institutions	
Vendor	**Percentage**
Homegrown	25.5%
SCT	19.1%
PeopleSoft	12.8%
Datatel	8.5%
Jenzabar	6.4%
Total	**72.3%**

are public community colleges, many of which are part of a community college district.

Finally, quite different patterns of vendors of student information systems are associated with each of the Carnegie classes, as reflected in Table 5-9. This finding likely reflects the features

Table 5-10
Most Common Financial System Vendors

All Institutions	
Vendor	**Percentage**
SCT	24.4%
Datatel	13.9%
Jenzabar	12.7%
Homegrown	12.2%
PeopleSoft	11.7%
Total	**74.9%**
Doctoral Institutions	
Vendor	**Percentage**
SCT	30.8%
PeopleSoft	21.8%
Homegrown	19.5%
Oracle	6.0%
Total	**78.1%**
MA Institutions	
Vendor	**Percentage**
SCT	29.7%
Datatel	15.2%
Jenzabar	14.5%
PeopleSoft	12.1%
Homegrown	10.9%
Total	**82.4%**

BA Institutions	
Vendor	**Percentage**
Jenzabar	34.1%
Datatel	22.0%
SCT	21.2%
Total	**77.3%**
AA Institutions	
Vendor	**Percentage**
Homegrown	26.2%
Datatel	21.4%
SCT	19.0%
Oracle	7.1%
PeopleSoft	6.0%
Total	**79.7%**
Other Institutions	
Vendor	**Percentage**
SCT	15.2%
PeopleSoft	13.0%
Oracle	12.0%
Datatel	8.7%
Homegrown	5.4%
Total	**54.3%**

of the products to a large degree, but the rather marked differentiation within each Carnegie class is also an interesting pattern to note.

Financial Systems

Financial information systems are the second oldest of the systems, and again the oldest of these are found in doctoral institutions. While the mean and the median are nearly the same as for student systems, there is a wider gap between these values for financial systems across all Carnegie classes and a two-year difference for doctoral institutions, as shown in Table 5-6. Again, in Table 5-7 we see that significantly more doctoral and master's institutions expect to replace these systems in the next three years, but this number is smaller than those expecting to replace their student systems in that timeframe. The same pattern again holds for institutions reporting that their financial systems are managed by a system or district office (see Table 5-8). With respect to the most common vendors in the financial systems area, it is interesting to note that homegrown systems were reported more often than any single vendor by AA institutions (see Table 5-10).

Human Resources Systems

The average age of human resources systems is essentially the same for all categories of institutions (see Table 5-6), and again we see a pattern of more doctoral and master's institutions reporting that they plan to replace these systems in the next three years (see Table 5-7). As shown in Table 5-11, a notable finding related to the most common vendors of HR systems is that homegrown systems were reported sufficiently often to be included in the vendor table by all groups except BA institutions.

Table 5-11
Most Common Human Resources System Vendors

All Institutions	
Vendor	**Percentage**
SCT	20.2%
PeopleSoft	17.3%
Homegrown	15.1%
Datatel	12.3%
Jenzabar	7.6%
Total	**72.5%**
Doctoral Institutions	
Vendor	**Percentage**
PeopleSoft	31.1%
SCT	24.2%
Homegrown	21.2%
Total	**76.5%**
MA Institutions	
Vendor	**Percentage**
SCT	23.5%
Homegrown	16.3%
PeopleSoft	14.4%
Datatel	13.1%
Jenzabar	11.8%
Total	**79.1%**

BA Institutions	
Vendor	**Percentage**
Datatel	21.7%
SCT	20.8%
Jenzabar	19.8%
ADP	9.4%
PeopleSoft	6.6%
Total	**78.3%**
AA Institutions	
Vendor	**Percentage**
Homegrown	25.0%
Datatel	22.5%
PeopleSoft	15.0%
SCT	15.0%
Total	**77.5%**
Other Institutions	
Vendor	**Percentage**
PeopleSoft	16.7%
Concept	15.5%
SCT	11.9%
Homegrown	8.3%
ADP	7.1%
Total	**59.5%**

Development Systems

As shown in Table 5-6, there is consistent age of development systems across groups. The intent to replace these systems is once again highest among doctoral and MA institutions. However, looking at all respondents, development systems, along with library, course management, and grant systems, are the systems least likely to be replaced in the next three years. One point of departure from the patterns noted for the previous systems is that for AA schools development systems are less often provided at the district level (see Table 5-8). Table 5-12 illustrates the diversity with respect to vendors of development systems across all types of institutions.

Library Systems

An analysis of data for library systems did not find any differences regarding the age of systems across groups (see Table 5-6). Fewer institutions reported plans to replace these systems across all Carnegie classes. The baccalaureate institutions show a greater likelihood to replace library systems, with AA schools a close second. The pattern of a higher percentage of AA schools reporting these systems being provided at the district level once again emerged. With regard to vendors of library systems, note that even though there are a relatively small number of vendors listed, these vendors represent only one-half to two-thirds of all vendors mentioned (with the exception of doctoral schools, where the vendors listed represent more than 70%). Thus the diversity of vendors in this area is not readily apparent in Table 5-13 due to the fact that none of the other vendors named by respondents met the 5% criterion to be included.

Table 5-12
Most Common Development System Vendors

All Institutions	
Vendor	**Percentage**
Blackbaud	18.7%
SCT	16.8%
Datatel	15.1%
Jenzabar	10.3%
BSR	10.1%
Homegrown	8.4%
Total	**90.7%**
Doctoral Institutions	
Vendor	**Percentage**
BSR	28.5%
SCT	16.4%
Homegrown	12.9%
Datatel	11.2%
Blackbaud	6.0%
JSI	5.2%
Total	**91.4%**
MA Institutions	
Vendor	**Percentage**
Blackbaud	24.3%
SCT	22.2%
Datatel	14.6%
Jenzabar	11.8%
JSI	5.6%
Total	**87.5%**

BA Institutions	
Vendor	**Percentage**
Datatel	21.1%
Jenzabar	21.1%
Blackbaud	19.5%
SCT	15.4%
JSI	5.7%
Total	**90.1%**
AA Institutions	
Vendor	**Percentage**
Blackbaud	17.9%
Homegrown	15.4%
SCT	15.4%
Datatel	7.7%
Total	**89.7%**
Other Institutions	
Vendor	**Percentage**
Blackbaud	29.6%
Datatel	16.7%
Homegrown	14.8%
Jenzabar	9.3%
SCT	7.4%
BSR	5.6%
Total	**94.5%**

Course Management Systems

Course management systems are the newest of all the systems examined, which shouldn't be surprising because such systems are relatively new to the marketplace compared to the other types of systems, which have been available for decades. While not significantly different, it is worth noting that doctoral institutions were the first to implement course management systems. In the discussion of these systems in Section Three, we saw that 6% of baccalaureate institutions do not deploy course management systems or have any plans to do so—a higher percentage than other types of institutions. Consistently, only 9% of baccalaureate schools are planning to implement such a system in the next three years, compared to 13% of institutions overall. As for provision of such systems at the system or district level, as shown in Table 5-8 the pattern described earlier holds once again, but to a lesser degree for AA institutions. Because of the relatively small number of vendors with products in this area, there is relative consistency across Carnegie groups regarding the vendors of preference (see Table 5-14).

Grants Management Systems

Grants management systems are found primarily in doctoral institutions for obvious reasons. The age of these systems is consistent across groups (see Table 5-6), and while overall fewer respondents reported plans to replace

Table 5-13
Most Common Library System Vendors

All Institutions	
Vendor	**Percentage**
Innovative	24.00%
Sirsi	17.60%
Endeavor	12.70%
Homegrown	5.10%
PALS	5.00%
Total	**64.4%**
Doctoral Institutions	
Vendor	**Percentage**
Innovative	26.30%
Endeavor	20.30%
Sirsi	16.10%
Ex Libris	8.50%
Total	**71.2%**
MA Institutions	
Vendor	**Percentage**
Innovative	23.00%
Sirsi	18.90%
Endeavor	16.90%
Homegrown	5.40%
Total	**64.2%**

BA Institutions	
Vendor	**Percentage**
Innovative	31.30%
Sirsi	18.30%
Endeavor	7.00%
Total	**56.6%**
AA Institutions	
Vendor	**Percentage**
PALS	26.00%
Sirsi	18.20%
Homegrown	11.70%
Innovative	5.20%
Total	**61.1%**
Other Institutions	
Vendor	**Percentage**
Innovative	29.90%
Sirsi	16.10%
Endeavor	10.30%
Voyager	5.70%
Total	**62.0%**

Table 5-14
Most Common Course Management System Vendors

All Institutions	
Vendor	**Percentage**
Blackboard	42.5%
WebCT	33.5%
Homegrown	7.2%
Total	**83.2%**
Doctoral Institutions	
Vendor	**Percentage**
WebCT	40.2%
Blackboard	34.6%
Homegrown	6.3%
Total	**81.1%**
MA Institutions	
Vendor	**Percentage**
Blackboard	53.8%
WebCT	26.9%
Total	**80.7%**

BA Institutions	
Vendor	**Percentage**
Blackboard	53.6%
WebCT	23.6%
Homegrown	6.4%
Jenzabar	6.4%
Total	**90.0%**
AA Institutions	
Vendor	**Percentage**
WebCT	43.5%
Blackboard	36.5%
IPSI	5.9%
Total	**85.9%**
Other Institutions	
Vendor	**Percentage**
WebCT	38.8%
Blackboard	23.8%
Homegrown	21.3%
Total	**83.9%**

Table 5-15
Most Common Grants Management System Vendors

All Institutions	
Vendor	**Percentage**
Homegrown	35.7%
SCT	14.3%
Total	**50.0%**
Doctoral Institutions	
Vendor	**Percentage**
Homegrown	45.8%
SCT	12.5%
PeopleSoft	8.3%
Oracle	7.3%
Total	**73.9%**
MA Institutions	
Vendor	**Percentage**
Homegrown	27.7%
SCT	19.1%
Datatel	8.5%
Jenzabar	8.5%
Oracle	6.4%
Total	**70.2%**

BA Institutions	
Vendor	**Percentage**
SCT	34.8%
Datatel	17.4%
Homegrown	17.4%
Blackbaud	8.7%
Jenzabar	8.7%
Total	**87.0%**
AA Institutions	
Vendor	**Percentage**
Blackbaud	18.2%
Datatel	18.2%
Homegrown	18.2%
SCT	9.1%
Total	**63.7%**
Other Institutions	
Vendor	**Percentage**
Homegrown	36.2%
Research Master	19.1%
Blackbaud	6.4%
Jenzabar	6.4%
PeopleSoft	6.4%
Total	**74.5%**

Table 5-16
Status of Web Portal Deployment

	All	DR	MA	BA	AA	Other
Implemented	27.4%	35.1%	26.0%	24.8%	19.1%	30.2%
In process	18.4%	23.1%	18.3%	18.0%	9.0%	20.8%
Planning	39.5%	30.6%	43.2%	38.3%	48.3%	38.5%
No plans	14.8%	11.2%	12.4%	18.8%	23.6%	10.4%

these systems, they are the second most likely to be replaced for doctoral institutions. There are no differences among groups with regard to the provision of these systems at the system or district level. Once again we see rather striking differences in the vendors of choice across the various Carnegie groups (see Table 5-15).

Web Portals

While not exactly a traditional information system, a Web portal offers access to a variety of campus resources, including major administrative systems. Table 5-16 shows the various stages of portal deployment that characterize each of the Carnegie groups. More than 85% of survey respondents have implemented a Web portal or have such an implementation in process or planned. A significantly higher percentage of doctoral institutions have already deployed Web portals compared to all other groups. AA institutions have the fewest portals deployed, and significantly fewer of

Table 5-17
Development and Procurement Strategies for Web Portals

	All	DR	MA	BA	AA	Other
In-house only	14.4%	10.9%	12.8%	21.3%	7.4%	18.6%
Purchased product only	44.0%	31.9%	56.8%	48.1%	48.5%	30.2%
Open source only	5.7%	11.8%	2.0%	1.9%	7.4%	7.0%
In-house and purchased product	7.0%	9.2%	2.7%	6.5%	7.4%	11.6%
In-house and open source	8.9%	11.8%	6.1%	7.4%	11.8%	9.3%
Purchased product and open source	11.9%	12.6%	10.8%	8.3%	14.7%	15.1%
In-house, purchased product, and open source	3.4%	6.7%	3.4%	3.7%	1.5%	0.0%

Table 5-18
Percentage of Web Portals That Are Customizable by the Individual

	All	DR	MA	BA	AA	Other
Yes	59.4%	76.5%	60.8%	50.0%	44.1%	57.0%
No	40.6%	23.5%	39.2%	50.0%	55.9%	43.0%

Table 5-19
Percentage of Web Portals That Are Customizable To the Individual

	All	DR	MA	BA	AA	Other
Yes	47.3%	65.5%	43.9%	40.7%	44.1%	38.4%
No	52.7%	34.5%	56.1%	59.3%	55.9%	61.6%

these schools have portal implementations in process. However, nearly 50% of these schools say they are planning a Web portal implementation. More baccalaureate and AA institutions reported no plans to implement a Web portal than schools in other categories.

Looking at responses from the 529 institutions that reported a Web portal implemented, in process, or deployed, there are fairly distinct differences among Carnegie groups with regard to procurement strategies and characteristics of the portal. A higher percentage of doctoral institutions than any other group reported using or planning to use only open-source solutions, and schools in this category also reported using or planning to use only purchased products significantly less than the other Carnegie classes. AA institutions rank second in using or planning to use only open-source code for their portals, with just 2% and 1.9% of MA and BA institutions, respectively, reporting this development strategy. As evident in Table 5-17, doctoral institutions reported a myriad of strategies. Overall, the strategy of deploying only a purchased product is most common.

Customizability of implemented or planned portals differs significantly across Carnegie classes. Portals at doctoral institutions are more often customizable by and to the individual (see Tables 5-18 and 5-19). Interestingly,

Table 5-20
Percentages of Web Portal Customization for Specific Constituencies

	All	DR	MA	BA	AA	Other
Current Students	93.6%	93.3%	93.2%	93.5%	91.2%	96.5%
Prospective Students	63.1%	73.9%	63.5%	66.7%	47.1%	55.8%
Faculty	91.3%	91.6%	91.9%	95.4%	89.7%	86.0%
Staff	87.9%	90.8%	86.5%	88.9%	85.3%	87.2%
External Community	31.9%	35.3%	29.7%	30.6%	33.8%	31.4%
Alumni	55.6%	54.6%	58.1%	60.2%	48.5%	52.3%

Table 5-21
Web Portal Integration with Campus Administrative Systems

	All	DR	MA	BA	AA	Other
Yes	80.0%	87.4%	81.1%	74.1%	64.7%	87.2%
No	20.0%	12.6%	18.9%	25.9%	35.3%	12.8%

the only difference in the target audiences across groups (see Table 5-20) is for prospective students, with this customization most common at doctoral institutions and least common at AA institutions.

One of the main reasons for having a portal is to serve students better by providing easier access to the information they need to register for classes, conduct business with the university, and so forth. Table 5-21 shows the extent to which campus portals are connected or will be connected to their administrative systems. There are significant differences in this level of connectedness, with doctoral institutions most often having or planning to have these connected, followed by master's and then baccalaureate institutions. Fewer than two-thirds of AA institutions with a portal deployed, in process, or planned reported having or planning this level of integration.

Notes

1. Summaries of the annual Current Issues survey are available at <http://www.educause.edu/issues/index.asp?page=activities>.
2. Robert B. Kvavik et al., *The Promise and Performance of Enterprise Planning Systems for Higher Education* (Boulder, Colo.: EDUCAUSE Center for Applied Research, 2002). Information about ordering this publication is available at <http://www.educause.edu/ecar/research/doclisters.asp>. See also two summaries of this major research study, which are available at no charge through the EDUCAUSE Web site: Robert B. Kvavik and John Voloudakis, The Promise and Performance of Enterprise Systems for Higher Education. Summary of Findings, 2002, <http://www.educause.edu/ir/library/pdf/EDU0220.pdf>, and Paula King, Respondent Summary: The Promise and Performance of Enterprise Planning Systems for Higher Education, 2002, <http://www.educause.edu/ir/library/pdf/ecar_so/ers/ERS0204/ekf0204.pdf>.

APPENDIX A:

Core Data Service Participating Institutions

The following 636 institutions had completed and submitted the 2002 EDUCAUSE core data survey at the time of the publication of this monograph. An institution's 2000 Carnegie classification is noted in parentheses for U.S. institutions. Results reported in this monograph are aggregates of data from the 621 surveys that were in the database when the data "snapshot" was taken July 28, 2003.

Abilene Christian University (MA I)
Acadia University (Canada)
Albertus Magnus College (BA GEN)
Albion College (BA LA)
Albright College (BA LA)
Alexandria Technical College (AA)
Alma College (BA LA)
Alvernia College (BA GEN)
American University (DR INT)
American University in Cairo, The (Egypt)
American University of Beirut (Lebanon)
Angelo State University (MA I)
Anne Arundel Community College (AA)
Anoka-Ramsey Community College (AA)
Appalachian State University (MA I)
Aquinas College (MA II)
Arizona State University (DR EXT)
Arizona State University West (MA I)
Arkansas State University (MA I)
Armstrong Atlantic State University (MA I)
Auburn University (DR EXT)
Auburn University at Montgomery (MA I)
Auckland University of Technology (New Zealand)
Austin Community College (AA)
Averett University (BUS)
Baker University (MA I)
Baldwin-Wallace College (MA I)
Bastyr University (MA I)
Baylor University (DR INT)
Bellarmine University (MA I)
Beloit College (BA LA)
Bemidji State University (MA II)
Berea College (BA LA)
Berry College (BA GEN)
Bethel College and Seminary (MA I)
Bethune-Cookman College (BA GEN)
Biola University (DR INT)
Blackburn College (BA LA)
Blekinge Tekniska Högskola (Sweden)
Bloomfield College (BA GEN)
Bluffton College (BA GEN)
Boston Architectural Center (ART)
Boston University (DR EXT)
Bradley University (MA I)
Brandeis University (DR EXT)
Brenau University (MA I)
Bridgewater College (BA LA)
Bridgewater State College (MA I)
British Columbia Institute of Technology (Canada)
Brooklyn Law School (LAW)
Broome Community College (AA)
Brown University (DR EXT)
Bucknell University (BA LA)
Cabrini College (MA II)
Caldwell College (BA GEN)
California College of the Arts (ART)
California Lutheran University (MA I)
California Maritime Academy (OTHER)
California Polytechnic State University, San Luis Obispo (MA I)
California State Polytechnic University, Pomona (MA I)
California State University, Bakersfield (MA I)
California State University, Chico (MA I)
California State University, Dominguez Hills (MA I)

California State University, Fresno (MA I)
California State University, Fullerton (MA I)
California State University, Hayward (MA I)
California State University, Northridge (MA I)
California State University, Sacramento (MA I)
California State University, San Marcos (MA I)
California State University, Stanislaus (MA I)
Calumet College of Saint Joseph (BA GEN)
Calvin College (BA GEN)
Campbellsville University (MA II)
Canisius College (MA I)
Capital University (MA II)
Carlow College (MA I)
Carroll College (BA GEN)
Case Western Reserve University (DR EXT)
Catawba College (BA GEN)
Cedar Crest College (BA GEN)
Cedarville University (BA GEN)
Central College (BA GEN)
Central Lakes College (AA)
Central Lakes College-Staples Campus (AA)
Central Washington University (MA I)
Chalmers University of Technology (Sweden)
Chandler-Gilbert Community College (AA)
Charles Sturt University (Australia)
Charleston Southern University (MA I)
Chattanooga State Technical Community College (AA)
Chowan College (BA GEN)
Christian Brothers University (MA II)
Cisco Junior College (AA)
Clarke College (BA GEN)
Cleveland Institute of Art (ART)
Coastal Carolina Community College (AA)
Colby-Sawyer College (BA GEN)
Colgate University (BA LA)
College Misericordia (HEALTH)
College of Mount Saint Joseph (MA II)
College of New Jersey, The (MA I)
College of Saint Catherine (MA I)
College of Saint Scholastica, The (MA I)
College of the Holy Cross (BA LA)
College of the Menominee Nation (TRIBAL)
College of William and Mary (DR INT)
College of Wooster (BA LA)
Collin County Community College District (AA)
Colorado State University (DR EXT)
Colorado State University-Pueblo (MA I)
Columbia State Community College (AA)
Columbia University (DR EXT)
Columbus State University (MA I)
Community College of Vermont (AA)
Concordia University, Portland (MA II)
Connecticut College (BA LA)
Coppin State College (MA I)
Cornell University (DR EXT)
County College of Morris (AA)
Covenant Theological Seminary (FAITH)
Curtin University of Technology (Australia)
Cuyahoga Community College (AA)
Dakota County Technical College (AA)
Dalhousie University (Canada)
Dartmouth College (DR INT)
Deakin University (Australia)
Delft University of Technology (Netherlands)
Denison University (BA LA)
Dickinson College (BA LA)
Dillard University (BA GEN)
Dominican College of Blauvelt (BA GEN)
Dominican University (MA I)
Drake University (MA I)
Drew University (BA LA)
Drexel University (DR INT)
Duke University (DR EXT)
Duquesne University (DR INT)
Earlham College and Earlham School of Religion (BA LA)
East Carolina University (DR INT)
Eastern Connecticut State University (MA I)
Eastern Mennonite University (BA LA)
Eastern Michigan University (MA I)
Eastern University (MA I)
Eastern Washington University (MA I)
Edgewood College (MA I)
Edison Community College (AA)
Edith Cowan University (Australia)
Elizabethtown College (BA GEN)
Elon University (MA I)
Embry-Riddle Aeronautical University (OTHER)
Emirates Academy of Hospitality Management (United Arab Emirates)
Emory University (DR EXT)
Empire State College SUNY (MA I)
Estrella Mountain Community College (AA)
ETH Zurich (Switzerland)
Eureka College (BA GEN)
Fairfield University (MA I)
Fayetteville State University (MA I)

Fergus Falls Community College (AA)
Ferrum College (BA GEN)
Flinders University (Australia)
Florida Atlantic University (DR INT)
Florida International University (DR EXT)
Florida Memorial College (BA GEN)
Florida State University (DR EXT)
Fontbonne University (MA I)
Fort Belknap College (TRIBAL)
Fort Hays State University (MA I)
Franciscan University of Steubenville (MA I)
Franklin and Marshall College (BA LA)
Franklin W. Olin College of Engineering (ENGR)
Furman University (BA LA)
Gallaudet University (MA I)
Gannon University (MA I)
Garden City Community College (AA)
GateWay Community College (AA)
Geneva College (MA II)
George Mason University (DR INT)
George Washington University, The (DR EXT)
Georgetown University (DR EXT)
Georgia Institute of Technology (DR EXT)
Georgia Perimeter College (AA)
Georgia Southern University (MA I)
Georgia State University (DR EXT)
Georgian Court College (MA I)
Glendale Community College (AA)
Gordon College (BA LA)
Goshen College (BA LA)
Grace College and Seminary (BA GEN)
Grand Rapids Community College (AA)
Grand Valley State University (MA I)
Grand View College (BA GEN)
Greenville College (BA GEN)
Griffith University (Australia)
Grove City College (BA GEN)
Guilford College (BA LA)
Hamilton College (BA LA)
Hampshire College (BA LA)
Hanover College (BA LA)
Harford Community College (AA)
Harvey Mudd College (ENGR)
Haskell Indian Nations University (TRIBAL)
HEC Montreal (Canada)
Helsinki University of Technology (Finland)
Hennepin Technical College (AA)
Hibbing Community College,
A Technical and Community College (AA)
Hillsdale College (BA LA)
Hiwassee College (AA)
Hofstra University (DR INT)
Holy Family College (MA I)
Hood College (MA I)
Houghton College (BA GEN)
Howard Community College (AA)
Hudson Valley Community College (AA)
Humber Institute of Technology and
Advanced Learning (Canada)
Humboldt State University (MA I)
Huntington College (BA GEN)
Huston-Tillotson College (BA GEN)
Idaho State University (DR INT)
Illinois College (BA GEN)
Illinois Valley Community College (AA)
Illinois Wesleyan University (BA LA)
Immaculata University (MA I)
Indiana University Bloomington (DR EXT)
Indiana University East (BA GEN)
Indiana University Northwest (MA I)
Indiana University Southeast (MA I)
Indiana University-Purdue University
Indianapolis (DR INT)
Inver Hills Community College (AA)
Iowa State University (DR EXT)
Iowa Wesleyan College (BA GEN)
Itasca Community College (AA)
ITESM (Mexico)
Ithaca College (MA I)
Jackson Community College (AA)
James Madison University (MA I)
Jamestown College (BA GEN)
Jefferson Community College (AA)
John Carroll University (MA I)
Johnson State College (MA I)
Joliet Junior College (AA)
Judson College (BA GEN)
Juniata College (BA LA)
Kansas City Art Institute (ART)
Keene State College (MA II)
Kennesaw State University (MA I)
Knox College (BA LA)
Kutztown University of Pennsylvania (MA I)
Kwantlen University College (Canada)
La Trobe University (Australia)
Lake Superior College (AA)
Lane Community College (AA)
Langara College (Canada)

Laramie County Community College (AA)
Le Moyne College (MA II)
Lees-McRae College (BA LA)
Lesley University (MA I)
Lewis University (MA I)
Lexington Community College (AA)
Lincoln Land Community College (AA)
Lincoln University (New Zealand)
Lindenwood University (MA I)
Linfield College (BA GEN)
Linkoping University (Sweden)
Linn-Benton Community College (AA)
Loras College (MA II)
Louisiana State University (DR EXT)
Loyola College in Maryland (MA I)
Loyola University Chicago (DR EXT)
Luther College (BA LA)
Lyndon State College (BA GEN)
Madisonville Community & Technical College (AA)
Madonna University (MA I)
Manchester College (BA GEN)
Mansfield University of Pennsylvania (MA I)
Manukau Institute of Technology (New Zealand)
Marist College (MA I)
Marquette University (DR EXT)
Mary Washington College (BA LA)
Marygrove College (TEACH)
Marywood University (MA I)
Massey University (New Zealand)
McDaniel College (BA LA)
McGill University (Canada)
McKendree College (BA GEN)
McMaster University (Canada)
Mercy College (MA I)
Merrimack College (BA GEN)
Mesabi Range Community and Technical College (AA)
Metropolitan State University (MA II)
MGH Institute of Health Professions (HEALTH)
Michigan State University (DR EXT)
Michigan Technological University (DR INT)
Middle Georgia College (AA)
Middle Tennessee State University (DR INT)
Minneapolis Community and Technical College (AA)
Minnesota State College-Southeast Technical-Winona (AA)
Minnesota State University, Mankato (MA I)
Minnesota West Community & Technical College (AA)
Mississippi State University (DR EXT)
Missouri Valley College (BA GEN)
Missouri Western State College (BA GEN)
MIT (DR EXT)
Monash University (Australia)
Montana State University-Billings (MA I)
Montana State University-Bozeman (DR INT)
Montana Tech of the University of Montana (ENGR)
Montgomery County Community College (AA)
Moravian College (BA LA)
Morehouse School of Medicine (MED)
Morningside College (MA II)
Mott Community College (AA)
Mount Allison University (Canada)
Mount Aloysius College (BA AA)
Mount Holyoke College (BA LA)
Mount Marty College (MA II)
Mount Saint Mary's College and Seminary (MA I)
Mount Vernon Nazarene University (BA GEN)
Murdoch University (Australia)
Muskingum College (BA LA)
National University (MA I)
Nebraska Wesleyan University (BA LA)
Neumann College (BA GEN)
Nevada State College (BA GEN)
New Jersey Institute of Technology (DR INT)
Niagara County Community College (AA)
Normandale Community College (AA)
North Carolina Central University (MA I)
North Carolina School of the Arts (ART)
North Carolina State University (DR EXT)
North Central College (MA I)
North Harris Montgomery Community College District (AA)
North Hennepin Community College (AA)
North Shore Community College (AA)
Northeast State Technical Community College (AA)
Northeastern Ohio Universities College of Medicine (MED)
Northeastern University (DR EXT)
Northern Arizona University (DR INT)
Northern Illinois University (DR EXT)

Northland Community &
Technical College (AA)
Northwest Missouri State University (MA I)
Northwest Technical College, Detroit Lakes
Campus (AA)
Northwest Technical College-Bemidji (AA)
Northwest Technical College-
East Grand Forks (AA)
Northwest Technical College-Moorhead (AA)
Northwest Technical College-Wadena (AA)
Northwestern Michigan College (AA)
Northwestern University (DR EXT)
Oakland Community College (AA)
Oakland University (DR INT)
Oakton Community College (AA)
Oberlin College (BA LA)
Occidental College (BA LA)
Ohio Dominican University (BA GEN)
Ohio Northern University (BA GEN)
Ohio State University, The (DR EXT)
Okanagan University College (Canada)
Oklahoma Christian University (BA GEN)
Oklahoma State University (DR EXT)
Oklahoma State University
College of Osteopathic Medicine (MED)
Onondaga Community College (AA)
Oregon Institute of Technology (BA GEN)
Oregon State University (DR EXT)
Otterbein College (MA II)
Ouachita Baptist University (BA GEN)
Pace University (MA I)
Pacific Lutheran University (MA I)
Palm Beach Community College (AA)
Parker College of Chiropractic (HEALTH)
Peirce College (AA)
Pennsylvania College of Technology (BA AA)
Philadelphia University (MA I)
Phoenix College (AA)
Pima County Community College District (AA)
Pine Technical College (AA)
Plymouth State University (MA II)
Point Loma Nazarene University (MA II)
Point Park College (MA II)
Pomona College (BA LA)
Portland State University (DR INT)
Prairie View A&M University (MA I)
Prescott College (MA II)
Princeton University (DR EXT)
Purdue University (DR EXT)
Queens University of Charlotte (MA II)
Queensland University of Technology (Australia)
Quinnipiac University (MA I)
Randolph-Macon Woman's College (BA LA)
Reed College (BA LA)
Rensselaer at Hartford (BUS)
Rensselaer Polytechnic Institute (DR EXT)
Rhode Island School of Design (ART)
Rice University (DR EXT)
Richard Bland College (AA)
Ridgewater College (AA)
Rio Salado College (AA)
Riverland Community College (AA)
Robert Morris University (BUS)
Rochester Community and
Technical College (AA)
Rochester Institute of Technology (MA I)
Rowan University (MA I)
Rutgers, The State University of New Jersey
New Brunswick (DR EXT)
Sage Colleges, The (MA I)
Saint Cloud Technical College (AA)
Saint Francis University (MA I)
Saint John's University/
College of Saint Benedict (BA LA)
Saint Louis University (DR EXT)
Saint Mary's University of Minnesota (MA I)
Saint Paul College (AA)
Salem Academy and College (BA LA)
Sam Houston State University (MA I)
Samford University (MA I)
San Juan College (AA)
Santa Clara University (MA I)
Santa Fe Community College (AA)
Saskatchewan Institute of Applied Science &
Technology (Canada)
School of the Art Institute of Chicago (ART)
Schreiner University (BA LA)
Scottsdale Community College (AA)
Seton Hall University (DR INT)
Shepherd College (BA GEN)
Shorter College (BA GEN)
Siena Heights University (MA I)
Simon Fraser University (Canada)
Sinclair Community College (AA)
Singapore Management University (Singapore)
Sonoma State University (MA I)
South Carolina State University (DR INT)
South Central Technical College, Mankato (AA)

South Mountain Community College (AA)
Southeastern Community College (AA)
Southern Cross University (Australia)
Southern Illinois University at Carbondale (DR EXT)
Southern Illinois University Edwardsville (MA I)
Southern Methodist University (DR EXT)
Southern Oregon University (MA I)
Southwest State University (MA II)
Southwest Tennessee Community College-Union Campus (AA)
Southwest Texas State University (MA I)
Spring Arbor University (MA II)
St. Cloud State University (MA I)
St. Olaf College (BA LA)
St. Clair County Community College (AA)
St. John's College (BA LA)
St. John's University (DR INT)
St. Lawrence University (BA LA)
Stanford University (DR EXT)
Stephen F. Austin State University (MA I)
Stonehill College (BA GEN)
Stony Brook University (DR EXT)
Suffolk County Community College (AA)
SUNY College at Brockport (MA I)
SUNY College at Oneonta (MA I)
SUNY College at Plattsburgh (MA I)
SUNY College at Potsdam (MA I)
SUNY College of Optometry (HEALTH)
Susquehanna University (BA LA)
Sweet Briar College (BA LA)
Syracuse University (DR EXT)
Tarleton State University (MA I)
Taylor University (BA GEN)
Teacher's College, Columbia University (DR EXT)
Texas A&M University (DR EXT)
Texas A&M University at Galveston (BA LA)
Texas Christian University (DR INT)
Texas State Technical College-Harlingen (AA)
Texas Tech University (DR EXT)
Texas Wesleyan University (MA II)
Thiel College (BA GEN)
Towson University (MA I)
Tri-State University (BA GEN)
Trinity College (BA LA)
Trinity University (MA I)
Tusculum College (MA II)
Union College (BA LA)
Union County College (AA)
Union University (MA II)
United States Air Force Academy (OTHER)
Universidad Nacional Autonoma de Mexico (Mexico)
Universite de Lausanne (Switzerland)
University at Albany, SUNY (DR EXT)
University College Cork (Ireland)
University of Adelaide (Australia)
University of Akron (DR INT)
University of Alabama at Birmingham (DR EXT)
University of Arizona (DR EXT)
University of Arkansas (DR EXT)
University of Auckland (New Zealand)
University of Ballarat (Australia)
University of Bridgeport (DR INT)
University of British Columbia, The (Canada)
University of California, Berkeley (DR EXT)
University of California, San Diego (DR EXT)
University of California, Santa Barbara (DR EXT)
University of Canberra (Australia)
University of Canterbury (New Zealand)
University of Central Florida (DR INT)
University of Charleston (BA GEN)
University of Chicago (DR EXT)
University of Cincinnati (DR EXT)
University of Colorado at Boulder (DR EXT)
University of Colorado at Denver (DR INT)
University of Dayton (DR INT)
University of Delaware (DR EXT)
University of Dubuque (MA II)
University of Findlay (MA I)
University of Florida (DR EXT)
University of Hawaii at Hilo (BA LA)
University of Hawaii at Manoa (DR EXT)
University of Houston (DR EXT)
University of Idaho (DR EXT)
University of Illinois at Urbana-Champaign (DR EXT)
University of Indianapolis (MA I)
University of Iowa, The (DR EXT)
University of La Verne (DR INT)
University of Louisville (DR EXT)
University of Maine (DR EXT)
University of Maine at Augusta (BA AA)
University of Maine at Presque Isle (BA LA)
University of Maryland (DR EXT)
University of Maryland, Baltimore County (DR EXT)

University of Maryland University College (MA I)
University of Memphis, The (DR EXT)
University of Miami (DR EXT)
University of Michigan-Ann Arbor (DR EXT)
University of Minnesota (DR EXT)
University of Minnesota-Duluth (MA I)
University of Missouri-Columbia (DR EXT)
University of Missouri-Kansas City (DR INT)
University of Nebraska-Lincoln (DR EXT)
University of Nebraska at Kearney (MA I)
University of Nebraska at Omaha (MA I)
University of Nevada, Reno (DR EXT)
University of New Brunswick (Canada)
University of New England (Australia)
University of New England (MA II)
University of New Hampshire (DR EXT)
University of New Mexico (DR EXT)
University of North Carolina at Asheville (BA LA)
University of North Carolina at Chapel Hill (DR EXT)
University of North Carolina at Charlotte (DR INT)
University of North Carolina at Greensboro (DR INT)
University of North Carolina at Pembroke (MA I)
University of North Carolina at Wilmington (MA I)
University of North Dakota (DR INT)
University of North Florida (MA I)
University of North Texas (DR EXT)
University of Northern Colorado (DR INT)
University of Notre Dame (DR EXT)
University of Oklahoma (DR EXT)
University of Oklahoma Health Sciences Center (MED)
University of Oregon (DR EXT)
University of Otago (New Zealand)
University of Pennsylvania (DR EXT)
University of Portland (MA I)
University of Puerto Rico-Cayey University College (BA LA)
University of Puget Sound (BA LA)
University of Queensland, The (Australia)
University of Rhode Island (DR EXT)
University of Richmond (MA I)
University of Rochester (DR EXT)
University of Saint Thomas (MA I)
University of South Australia
University of South Carolina (DR EXT)
University of South Carolina-Beaufort (AA)
University of Southern California (DR EXT)
University of Southern Mississippi (DR INT)
University of Tasmania (Australia)
University of Technology, Sydney (Australia)
University of Tennessee at Chattanooga (MA I)
University of Texas at Arlington, The (DR EXT)
University of Texas at Brownsville (MA I)
University of Texas at Dallas (DR INT)
University of Texas at San Antonio (MA I)
University of Texas at Tyler (MA I)
University of Texas Medical Branch (MED)
University of Texas of the Permian Basin (MA I)
University of Texas-Pan American (MA I)
University of the Pacific (DR INT)
University of the South (BA LA)
University of the Sunshine Coast (Australia)
University of Toledo, The (DR EXT)
University of Toronto (Canada)
University of Tulsa (DR INT)
University of Utah (DR EXT)
University of Virginia (DR EXT)
University of Washington (DR EXT)
University of Waterloo (Canada)
University of West Florida (MA I)
University of Western Australia (Australia)
University of Western Sydney (Australia)
University of Windsor (Canada)
University of Winnipeg (Canada)
University of Wisconsin-Eau Claire (MA I)
University of Wisconsin-Madison (DR EXT)
University of Wisconsin-Platteville (MA I)
University of Wisconsin-Superior (MA I)
Ursinus College (BA LA)
Valley City State University (BA GEN)
Valparaiso University (MA I)
Vassar College (BA LA)
Vermilion Community College (AA)
Vermont Law School (LAW)
Victoria University of Technology (Australia)
Victoria University of Wellington (New Zealand)
Walsh University (MA I)
Washington & Jefferson College (BA LA)
Washington State University (DR EXT)
Wayne State University (DR EXT)
Weber State University (MA II)
Wellesley College (BA LA)
Wesleyan College (BA LA)
Wesleyan University (BA LA)

West Texas A&M University (MA I)
West Virginia School of
Osteopathic Medicine (MED)
West Virginia State College (BA GEN)
West Virginia Wesleyan College (BA LA)
Western Carolina University (MA I)
Western Kentucky University (MA I)
Westminster College (MA I)
Westmont College (BA LA)
Wheaton College (Massachusetts) (BA LA)
Whitman College (BA LA)
Whitworth College (MA I)
Wichita State University (DR INT)
Widener University (DR INT)
Wiley College (BA GEN)
William Woods University (MA I)
Williams College (BA LA)
Winona State University (MA I)
Wofford College (BA LA)
Yale University (DR EXT)
Yeshiva University (DR EXT)
York College of Pennsylvania (MA II)
York University (Canada)
Zion Bible Institute

APPENDIX B:

2002 EDUCAUSE Core Data Survey

2002 EDUCAUSE Core Data Survey

9/13/2003 7:49:17 PM GMT

IT Organization, Staffing, Planning

1. What is the title of the highest ranking technology administrator/officer on your campus?

2. To whom does this individual report?

- ☐ Chancellor/President/CEO
- ☐ Highest Ranking Academic Officer (Provost, Academic VP, Dean)
- ☐ Highest Ranking Administrative Officer (Administrative/Executive VP)
- ☐ Highest Ranking Business Officer
- ☐ Second Level Academic Officer (Assistant/Associate Provost or VP)
- ☐ Second Level Administrative Officer (Assistant/Associate VP)
- ☐ Other

3. What functions report to the highest ranking technology officer on your campus? (Check all that apply.)

- ☐ Academic/Research Computing
- ☐ Administration of IT Organization
- ☐ Administrative Systems
- ☐ Computer Store
- ☐ Desktop/User Support Services
- ☐ Distance Education
- ☐ Instructional Technology
- ☐ IT Policy
- ☐ IT Security
- ☐ Library
- ☐ Mailroom
- ☐ Media Services
- ☐ Network Infrastructure and Services
- ☐ Operations/Data Center
- ☐ Print Services
- ☐ Technology R&D
- ☐ Telephony
- ☐ Web Support Services

Other

4. Is this individual a member of your president's or chancellor's cabinet?

- ☐ Yes
- ☐ No

5. Please **estimate** the number of FTE staff (including support staff and managers) and students employed by the central IT organization of your campus in each of the functional areas listed below. (Please do not include staff who support a hospital or who support IT for other campuses if your campus is part of a multicampus system or district. If you have no staff or students in a functional area, enter 0. If less than a whole number, use decimals rather than fractions. Click on or pass your cursor over the underlined functional area to see how we have defined these areas for survey reporting purposes. Even if you do not use this taxonomy on your campus, please re-distribute your staff and student numbers according to these definitions to ensure comparable data comparisons across all campuses. These definitions are also found in the full glossary available by clicking on Survey Help.)

Function	Staff	Students
1. Academic/Research Computing		
2. Administration of IT Organization		
3. Administrative Systems		
4. Desktop Support/User Support Services/Computer Store		
5. Instructional Technology		
6. IT Policy		
7. IT Security		
8. Network Infrastructure and Services		
9. Operations/Data Center		
10. Public Help Desk		
11. Telephony		
12. Web Support Services		
Other Function		

Total central IT unit FTE:

6. How many FTE staff classified as IT professionals are employed **outside the central IT organization** of your campus, including limited term employees? (If no such staff are employed outside the central IT organization, enter 0. If less than a whole number, use decimals rather than fractions. This number should be available from your campus HR office.)

FTE Staff

☐ This number is unknown.

7. Does your campus have a separate salary scale for IT professionals?

☐ Yes

☐ No

8. Does your campus use either a separate set of IT job titles or a broadband IT classification and compensation system?

☐ Yes

☐ No

9. Please answer the following questions regarding strategic planning for IT at your campus.

Does your campus strategic plan include strategies and directions for IT?

☐ Yes

☐ No

Does your campus have a stand-alone IT strategic plan?

☐ Yes

☐ No

10. Which of the following group(s) at your campus provide(s) advice about IT strategies? (Check all that apply.)

☐ Trustee Committee

☐ Administrative Committee

☐ Faculty Committee

☐ General Technology Committee

Other

(e.g., separate student advisory group, state-level group)

☐ None of the above — we do not have any IT advisory groups.

11. In developing campus policy with regard to IT security and privacy, what parties are involved? (Check all that apply.)

- ☐ IT policy/security officer
- ☐ Central IT organization
- ☐ Auditor
- ☐ General counsel
- ☐ Board of trustees
- ☐ Chief financial officer
- ☐ Chief academic officer
- ☐ President's cabinet
- ☐ Campus task force
- ☐ State agency or system office
- Other
- ☐ None of the above — we are not engaged in policy development.

IT Financing and Management

1. Please enter the actual campus dollar appropriations/revenues for IT for fiscal year 2001-2002 for each of the funding sources listed. (If you have no appropriations/revenues in a category, enter 0. Enter the dollar amount in U.S. Dollars, rounded to the nearest whole dollar, without commas, e.g., $5,499.51 would be entered as 5500.)

Category of Revenue	Dollar Amount
Operating appropriation to central IT organization	$
Capital appropriations for central IT organization (other than those amortized through rates)	$
Resale of central services (chargeback) to departments (e.g., network, repair)	$
Resale of central services to external entities (e.g., network, repair)	$
Resale of products to departments (e.g., computer store) net revenue	$
Resale of products to external entities (e.g., computer store) net revenue	$

2. Please **estimate** the percent from the various sources of funding used to support central IT functions at your campus for fiscal year 2001-2002. (Enter percentages as whole numbers, e.g., 70% would be entered as 70. If a function is not applicable, **leave the entire row blank**. Otherwise, please ensure that your percentages for a functional row add up to 100%. Click on or pass your cursor over the underlined functional area to see how we have defined each area for survey reporting purposes to ensure comparable data comparisons across all campuses. These definitions are also found in a full glossary available by clicking on Survey Help.)

Central IT Function	Campus Operating Budget	Campus Capital Budget	Student Tech Fee	Cost Recovery	Other Sources	Total
Academic/Research Computing	%	%	%	%	%	
Administration of IT Organization	%	%	%	%	%	
Administrative Systems	%	%	%	%	%	
Desktop/User Support Services/Computer Store	%	%	%	%	%	
Instructional Technology	%	%	%	%	%	
IT Policy	%	%	%	%	%	
IT Security	%	%	%	%	%	
Network Infrastructure and Services	%	%	%	%	%	
Operations/Data Center	%	%	%	%	%	
Public Help Desk	%	%	%	%	%	
Telephony	%	%	%	%	%	
Web Support Services	%	%	%	%	%	

Other Function		%	%	%	%	%

3. What dollar amount, if any, does the central IT organization of your campus annually budget per IT staff member (on average) for training or professional development? (Enter the dollar amount in U.S. Dollars, rounded to the nearest whole dollar, without commas, e.g., $5,499.51 would be entered as 5500. Enter 0 if you do not allocate funds for this purpose.)

$

4. What was the total compensation for fiscal year 2001-2002 (including fringe benefits even if benefits are paid elsewhere on campus and not charged to the central IT organization) for the following categories of individuals paid by or through the central IT organization of your campus? (If a category does not apply, enter 0. Enter the dollar amount in U.S. Dollars, rounded to the nearest whole dollar, without commas, e.g., $5,499.51 would be entered as 5500.)

Staff (both technical and non-technical)	$
Students	$
Consultants	$
Contractors	$
Other	$

5. Please enter your best **estimate** of the total spent on salaries (including benefits) for fiscal year 2001-2002 for staff who are classified as IT professionals employed in departments **outside the central IT organization** of your campus. (Enter the dollar amount in U.S. Dollars, rounded to the nearest whole dollar, without commas, e.g., $5,499.51 would be entered as 5500. Your campus HR office may be able to provide this figure. If no such staff are employed outside the central IT organization, enter 0.)

$

☐ This amount is unknown.

6. Please enter your best **estimate** of the total spent in fiscal year 2001-2002 on information technology (other than salaries and benefits) in departments outside the central IT organization of your campus. (Note: The operative phrase here is "best estimate." We do not expect this figure to be an exact calculation of actual dollars spent. Enter the estimated dollar amount in U.S. Dollars, rounded to the nearest whole dollar, without commas, e.g., $5,499.51 would be entered as 5500.)

$

☐ We cannot reasonably estimate this amount.

7. Does your campus charge a **general student technology fee**?

☐ Yes

☐ No

If you answered yes to the question above, please answer the following four questions...

How much is this fee per FTE student? (Enter amount in whole U.S. dollars.)

$

On what basis is it charged?

☐ Flat fee per year

☐ Flat fee per semester/quarter

☐ Percentage of tuition

☐ Based on credit hours

☐ Other

What were the total dollars generated by this fee for fiscal year 2001-2002? (Enter amount in whole U.S. dollars.)

$

Who determines how these dollars are spent? (Check all that apply)

☐ Students

☐ IT administration

- [ ] Campus committee
- [ ] Senior administration
- [ ] State agency or system office
- [ ] Funds are earmarked or restricted by policy

Other

8. Do students pay a separate fee for residence-hall network connections at your campus?

- [ ] Yes
- [ ] No
- [ ] There are no residence-hall network connections
- [ ] There are no residence halls

Estimate how many computers your campus owns/leases. (Enter a whole number.)

computers

10. What is your campus' planned replacement cycle for these computers?

11. What percent of the computers owned or leased by your campus are on a replacement cycle for which dollars are fully funded in the budget? (Enter percentages as whole numbers, e.g., 70% would be entered as 70.)

%

12. What percent of the computers owned or leased by your campus have been replaced in fiscal year 2001-2002? (Enter percentages as whole numbers, e.g., 70% would be entered as 70.)

%

13. Regardless of how your campus network is financed, does the current funding model include renewal of the capital plant including wiring, electronics, and so forth?

- [ ] Yes
- [ ] No

14. Please indicate which of the following IT services are covered by written service level agreements. (Check all that apply.)

- [ ] Academic/research support
- [ ] Administrative Systems Support
- [ ] Data center services
- [ ] Desktop/user support services
- [ ] Instructional technology support
- [ ] Media services
- [ ] Network services
- [ ] Print services
- [ ] Telephone services
- [ ] Web support services

Other

- [ ] None of the above — we have no written service level agreements.

15. Please indicate which if any of the following are run by an external supplier (that is, a non-affiliated entity such as a corporation or other organization) with whom your campus has contracted through an outsource or ASP arrangement.

- [ ] Administrative systems — transaction systems operation (e.g., payroll, grants, etc.)

- ☐ Administrative systems — transaction systems operation (e.g., payroll, grants, etc.)
- ☐ Administrative systems — application development
- ☐ Administrative systems — project management for implementations
- ☐ Data center / computer operations
- ☐ Desktop / user support services
- ☐ Instructional management system
- ☐ Media services
- ☐ Network services
- ☐ Print services
- ☐ Telephone services
- ☐ Web development / hosting
- ☐ All central IT staff and services

Other ☐

- ☐ None of the above — we do not outsource or use ASPs.

Faculty and Student Computing

1. How many hours a week does the public help desk at your campus operate during the academic year? (Enter a whole number, e.g., 24 x 7 support would be entered as 168, 24 x 5 support would be entered as 120, and so forth.)

☐ hours

2. **Estimate** what percent of your students use their own computers on campus. (This includes students using computers they already owned or that your campus has provided or leased to them or required them to purchase. Enter percentage as a whole number, e.g., 70% would be entered as 70.)

☐ %

3. Check the one statement below that best describes the student computer policy of your campus?

- ☐ All students are provided a personal computer.
- ☐ Students in general are required to purchase/lease their own personal computers.
- ☐ Students in some departments or majors are required to purchase/lease their own PCs.
- ☐ Personal computer purchase/lease is recommended but not required for all students.
- ☐ Personal computer purchase/lease is recommended but not required for students in some departments or majors.
- ☐ There are no requirements or recommendations regarding personal computers.

4. Does your campus offer high-speed network connections to students in residence halls?

- ☐ Yes
- ☐ No
- ☐ There are no residence halls

If you answered yes to the question above, please answer the following two questions…

Which is the most common speed offered?

- ☐ 10 mbs
- ☐ 10-11 mbs
- ☐ 10/100 mbs
- ☐ 100 mbs
- ☐ > 100 mbs

What is the primary technology? (Select only one.)

- ☐ Ethernet
- ☐ Cable Modem
- ☐ DSL
- ☐ Wireless
- ☐ Other ☐

5. Does your campus issue an e-mail account to each student for the purpose of receiving official communications?

- ☐ Yes
- ☐ No

6. Because students arrive with e-mail addresses of their own, some campuses have stopped providing universal student e-mail. Please select the one statement below that best describes your practice.

- ☐ We have never offered universal student e-mail.
- ☐ We offer universal student e-mail and have no plans to discontinue this service.
- ☐ We offer universal student e-mail but are seriously considering discontinuing this service.
- ☐ We have already stopped offering universal student e-mail.

7. Please check all the statements below that describe your campus' support for faculty in the use of technology in teaching and learning.

- ☐ We have a designated instructional technology center available to all campus faculty.
- ☐ Our campus faculty teaching / excellence center works closely with IT and has a strong emphasis on technology.
- ☐ We have instructional designers available to work with instructional technologists to help faculty develop courses that use technology.
- ☐ We employ instructional technologists who are discipline specialists to work in academic departments.
- ☐ We offer intensive support for faculty who are heavy users of technology in teaching.
- ☐ We offer faculty training in scheduled seminars.
- ☐ We offer faculty training upon request.
- ☐ We offer activities and opportunities for faculty who use technology in innovative ways to share their experiences (e.g., technology fairs, brown bags, etc.).

Other

8. Please check the statement that most accurately describes your campus' practice regarding course management systems.

- ☐ We have not deployed a course management system and do not plan to.
- ☐ We are planning to deploy one or more course management systems.
- ☐ We support a single commercial-product course management system.
- ☐ We support more than one commercial-product course management system.
- ☐ We support a single homegrown course management system.
- ☐ We support more than one homegrown course management system.
- ☐ We employ a hybrid approach (support both homegrown and commercial).
- ☐ Other

9. Please select the statement that most accurately describes faculty use of a course management system at your campus.

- ☐ Our course management system(s) is ubiquitous, employed for all or nearly all courses.
- ☐ Our course management system(s) is used selectively by faculty.
- ☐ Faculty at our campus do not use course management systems.

10. Please indicate the percent of campus classrooms that are centrally scheduled that are permanently equipped with the technologies listed. (Enter percentages as whole numbers, e.g., 70% would be entered as 70. If a technology is not applicable, enter 0.)

Wired Internet connections	%
Wireless Internet connectivity	%
LCD projectors	%
Computers	%
Televisions	%
Other technology	%

Network and Security

1. What is the total bandwidth available (capacity in megabits, e.g., a T1 would be entered as 1.5) from your campus? (If no bandwidth, enter 0.)

to the commodity internet
Mb (megabits per second)

to high-performance networks such as Abilene, vBNS, etc.
Mb (megabits per second)

2. Please check all statements that apply regarding tracking or shaping bandwidth utilization on your campus Internet connection.

- ☐ We do not track or shape bandwidth utilization.
- ☐ We only track utilization.
- ☐ We shape by time of day.
- ☐ We shape by location on campus (for example, residence halls).
- ☐ We shape by type of traffic (e.g., Napster, KaZaA, Instant Messaging).
- ☐ We shape by direction (incoming versus outgoing).

Other

3. Please check the way(s) in which remote access is provided at your institution for the following campus constituents. (Check all that apply. If you have no modem pool lines, leave the "Total Number of Lines" box empty and check "Not Provided.")

	Total Number of Lines	For Faculty	For Students	For Staff	For Alumni	Not Provided
Modem pool		☐	☐	☐	☐	☐
Outsourced modem pool		☐	☐	☐	☐	☐
Institutionally arranged discount with ISP		☐	☐	☐	☐	☐
Subsidized ISP accounts		☐	☐	☐	☐	☐
State academic network		☐	☐	☐	☐	☐
Regional academic network		☐	☐	☐	☐	☐
Other		☐	☐	☐	☐	☐

4. Please indicate the percentage of the following areas that have wireless access at your campus.

Area	Not Applicable	1-25%	26-50%	51-75%	76-100%	
Classrooms	☐	☐	☐	☐	☐	
Public Labs	☐	☐	☐	☐	☐	
Library	☐	☐	☐	☐	☐	
Residence Halls	☐	☐	☐	☐	☐	
Research Facilities	☐	☐	☐	☐	☐	
Administration Buildings	☐	☐	☐	☐	☐	
Open Spaces	☐	☐	☐	☐	☐	
Other Area	☐	☐	☐	☐	☐	Clear Row

5. From how many campus sites (not counting individual desktops) can an interactive videoconference be initiated? (Enter a whole number. If you have no such sites, enter 0.)

sites

6. **Estimate** how many desktops at your campus can deploy desktop videoconferencing? (Enter a whole number. If you have none, enter 0.)

desktops

7. Please indicate the status at your campus of the following technologies.

Technology	Deployed	Piloting	In progress	Considering	Not planned
Voice over IP	❑	❑	❑	❑	❑
Video over IP	❑	❑	❑	❑	❑
PKI	❑	❑	❑	❑	❑
LDAP	❑	❑	❑	❑	❑
Biometrics	❑	❑	❑	❑	❑
Smart Cards	❑	❑	❑	❑	❑
Web Services	❑	❑	❑	❑	❑

8. Please check all of the following that apply at your campus regarding firewalls.

My campus has:

- ❑ a firewall at our external Internet connection
- ❑ firewalls around certain high-security servers or networks
- ❑ firewalls deployed by or on behalf of individual departments
- ❑ a requirement that all clients use personal firewalls
- ❑ no firewalls

Other

9. Please check all of the following that apply at your campus regarding security-related software patches and updates.

- ❑ We require all of our critical systems to be expeditiously patched or updated.
- ❑ We require some of our critical systems to be expeditiously patched or updated.
- ❑ We require all campus owned computers connected to our network to have known security holes fixed.
- ❑ We conduct proactive scans to detect known security exposures in our critical systems.
- ❑ We conduct proactive scans to detect known security exposures in all campus owned computers connected to our network.
- ❑ Our security system includes an intrusion detection system.

Other

Information Systems

1. Please complete the following grid regarding the major information systems at your campus. (For campuses within systems or districts, if an information system is or soon will be provided at the system/district level, please enter the information requested for your campus but also check "provided at system/district level" for that system. If you have not implemented or do not plan to implement a specified system, please check N/A for that system. If a commercial product, please enter the name(s) of the vendor(s) or, if developed internally, please enter "homegrown.")

System	Not Applicable	Year Implemented (yyyy)	Vendor Names or "Homegrown"	Will Implement or Replace in the Next 3 Years	Provided at System/ District Level
Student	❑			❑	❑
Financial	❑			❑	❑
HR	❑			❑	❑
Development	❑			❑	❑
Library	❑			❑	❑
Course Management	❑			❑	❑
Grants Management	❑			❑	❑

2. Check the strategies below that your campus (or system/district office if information systems are provided at that level) employs for implementing or converting information systems. (Check all that apply.)

- ❑ Develop systems in house (homegrown)
- ❑ Develop systems in partnership with a vendor
- ❑ Purchase a commercial product without customization
- ❑ Purchase a commercial product and customize

- [ ] Buy best-of-breed applications
- [ ] Buy a package of integrated systems
- [ ] Enhance legacy systems and provide Web interfaces
- [ ] Outsource administrative systems

Other

3. If one of your strategies is to buy a commercial package and modify, please indicate the usual extent of modification. (Check all that apply.)

- [ ] Underlying code
- [ ] Configuration
- [ ] External modules

Other

- [ ] None of the above — we do not buy and modify commercial software.

4. Please check the appropriate statement for your campus (or system/district office if systems are provided at that level) regarding enterprise resource planning (ERP) systems.

- [ ] We have no plans for an ERP implementation.
- [ ] We are considering an ERP implementation.
- [ ] We are in the RFP stage of an ERP implementation.
- [ ] We have an ERP implementation in process.
- [ ] We have completed an ERP implementation or completed the segments we have chosen to implement.

5. If your campus (or system/district office if systems are provided at that level) has an ERP implementation or conversion project planned, in process, or completed, please **estimate** the percent of the total cost of the project that was or will be spent on the following. (Enter percentages as whole numbers, e.g., 70% would be entered as 70.)

	% of Total Cost
Software and software licenses	%
Software maintenance	%
Training	%
In-house staff costs	%
Consulting fees	%
Hardware	%
Other	%

- [ ] We do not have an ERP project planned, in-process, or completed

6. Please check the one statement that is most appropriate regarding a Web portal at your campus (or system/district office if this functionality is provided at that level).

- [ ] We have implemented a Web portal.
- [ ] We are in the process of implementing a Web portal.
- [ ] We are planning to implement a Web portal.
- [ ] We have no plans to implement a Web portal.

If you selected one of the first three choices above, please check all of the following characteristics that apply or will apply to your Web portal.

Our portal is or will be:

- [ ] developed in-house
- [ ] a purchased product
- [ ] based on open source (e.g., JavaSIG)
- [ ] customizable by the individual
- [ ] customized to the individual
- [ ] for current students
- [ ] for prospective students
- [ ] for faculty
- [ ] for staff
- [ ] for the external community
- [ ] for alumni
- [ ] integrated with campus administrative systems

Other

APPENDIX C:

Glossary of Terms from the Core Data Survey

Academic/Research Computing

For the purposes of our survey, please include the following in this area if applicable:

- Research computing hardware and software
- Research computing cycles from remote sites
- Staff for research computing consulting and technical assistance
- Academic hardware, software, and staff
- Discipline-specific applications development and support

Administration of IT Organization

For the purposes of our survey, please include the following in this area if applicable:

- Financial planning and management
- Communications and publications
- Human resource management
- Facilities management
- Technology R&D
- Administrative Staff
- CIO or CTO

Administrative Systems

For the purposes of our survey, please include in this area, if applicable, the hardware, software, staff, and other supporting infrastructure to develop, implement, maintain, and support legacy or enterprise resource planning (ERP) systems (e.g., PeopleSoft, SCT, Datatel, etc.) such as:

- Student administration (admissions, financial aid, registration, etc.)
- Financial information systems
- Procurement systems
- Human resource systems
- Payroll
- Research administration (grants and contracts)
- Library (if applicable)

Amortized Through Rates

An example of a capital appropriation amortized through rates would be funds derived from taking out a loan or drawing on the institution's endowment for an initiative such as a major network enhancement or a phone switch. Such special funds require payback and are usually repaid through a fee structure.

Biometrics

In computer security, biometrics refers to authentication techniques that rely on measurable physical characteristics that can be automatically checked. Examples include computer analysis of fingerprints or speech.

Broadband

Refers to an approach to job classification and pay structure that is broader and flatter than traditional systems, characterized by wider salary ranges and fewer job titles and vertical levels.

Computers

Refers to all devices that have the basic functionality of a microcomputer (e.g., desktops, laptops, servers). It does not refer to Palm devices or personal digital assistants.

Consultants

Refers to individuals or a firm that advises or consults with the institution about information technology plans or directions, either in general or with regard to a specific technology implementation or project.

Contractors

Refers to individuals or a organization with whom the institution contracts to provide IT infrastructure and/or specific IT services that might otherwise be delivered by IT staff. For the purposes of our survey, consultants are not to be included in the "contractors" category.

Desktop Support/User Support/Computer Store

For the purposes of our survey, please include the following in this area if applicable:

- Desktop computer technical analysis and consulting
- Computer resale, installation, and repair
- User training and education
- User documentation and general informational publication
- Infrastructure support for local (school-based) IT support providers
- User support staff
- Reference desk (if library services are part of central IT)

ERP

Refers to an integrated suite of administrative information systems designed to support and automate business processes through a centralized database system. In higher education, these systems usually include student systems, financial systems, and human resources (payroll/personnel) systems, as well as warehouse and planning tools.

FTE

Refers to full-time-equivalent personnel, not number of employees. For example, 2 half-time employees equal 1 FTE; 3 quarter-time employees equal .75 FTE. With respect to students, 10 hours of work should be considered .25 FTE.

Firewalls

Refers to a set of related programs and policies that protects the resources of a private network from users on other networks. A firewall can also control what outside resources users of the private network can access.

General Student Technology Fee

Refers to a general fee levied by the institution on all students, regardless of major or school, as opposed to specific, individual technology fees that might be charged based on major or other criteria.

IT Policy

For the purposes of our survey, please include the following in this area if applicable:

- IT policy development, dissemination, and education
- Information usage/management policy development and education
- Interpretation of current policy related to specific issues, situations, and incidents
- Coordinating response to incidents of inappropriate use of information or information technology
- Policy staff

IT Security

For the purposes of our survey, please include the following in this area if applicable:

- Vulnerability analysis
- Security planning and design and implementation
- Security policy and process development
- User education and guidance programs
- Incident response
- Security staff

Instructional Technology

For the purposes of our survey, please include the following in this area if applicable:

- Classroom technology (physical renovation and maintenance; provision of fixed and mobile technology)
- Course management systems (homegrown or Blackboard, WebCT, etc.)
- Specialized training and support for faculty
- Instructional support staff
- Media services (AV, video…)
- Public lab support
- Teaching and technology center

LDAP

Lightweight Directory Access Protocol refers to a relatively simple protocol for updating and searching directories running over TCP/IP.

Net Revenue

Refers to net revenue from sales to staff, students, and others as opposed to institutional purchases.

Network Infrastructure & Services

For the purposes of our survey, please include the following in this area if applicable:

- Wire and cable infrastructure for data and video networks
- Campus data network
- Remote access (modem pools, ISP)
- Commodity Internet
- High-performance research network (e.g., Abilene)
- Video network
- Converged network
- Wireless network
- E-mail
- Network staff, hardware, and software

Operations/Data Center

For the purposes of our survey, please include the following in this area if applicable:

- Systems administration and operation
- System backups
- Data center environmental support systems such as HVAC, UPS and backup power supply, and systems monitor
- Operations staff, hardware, and software
- Print services
- Mail room

Outsource or ASP

Outsource in this context refers to contracting with an external entity or vendor to provide IT services or infrastructure that you might otherwise have employed your IT staff to perform. It does not refer to an arrangement with another part of your institution or with a system office. ASP refers to an arrangement with an application service provider to provide services remotely using high-speed private networks. A common example is a Web site that other Web sites use for accepting payment by credit card as part of their online ordering systems.

PKI

Public Key Infrastructure refers to a system of public key encryption using digital certificates from Certificate Authorities and other registration authorities that verify and authenticate the validity of each party involved in an electronic transaction.

Portal

Refers to an approach to an institution's Web site that aims to leverage investments in enterprise information systems, data warehouses, and infrastructure by providing a seamless and easy-to-navigate Web interface to an integrated set of information services for various campus constituents.

Public Help Desk

For the purposes of our survey, please include the following in this area if applicable:

- Walk-in support for students, faculty, and staff
- Call-in support for students, faculty, and staff
- Knowledge base
- Specialized support centers
- Help desk staff

Shaping

"Shaping" bandwidth refers to adjusting parameters on the campus Internet connection to limit use through various means, such as type of connection, location of connection, direction of traffic, time of day, or other specific characteristics.

Smart Cards

Refers to a small electronic device about the size of a credit card that contains electronic memory, and possibly an embedded integrated circuit. Smart Cards are used for a variety of purposes, including storing information, storing digital cash, and providing a means to access computer networks.

Telephony

For the purposes of our survey, please include the following in this area if applicable:

- Wire and cable infrastructure for voice network
- Dial tone (including services to student housing)
- Voice mail
- Long distance resale
- Cellular and paging services
- Telephony staff, hardware, software, etc.

Web Services

Refers to a standardized way of integrating Web-based applications using the XML, SOAP, WSDL, and UDDI open standards over an Internet protocol backbone. XML is used to tag the data, SOAP is used to transfer the data, WSDL is used for describing the services available, and UDDI is used for listing what services are available. Used primarily as a means for businesses to communicate with each other and with clients, Web services allow organizations to communicate data without intimate knowledge of each other's IT systems behind the firewall. Web Services are sometimes referred to as application services.

Web Support Services

For the purposes of our survey, please include the following in this area if applicable:

- Web server support
- Content design and publication
- Web-based applications development or interface
- Web staff, hardware, and software

APPENDIX D:

Carnegie Classification Definitions

The following information is copyrighted by and used with permission of the Carnegie Foundation for the Advancement of Teaching.

The 2000 Carnegie Classification includes all colleges and universities in the United States that are degree-granting and accredited by an agency recognized by the U.S. Secretary of Education. The 2000 edition classifies institutions based on their degree-granting activities from 1995–96 through 1997–98. For definitions and detailed information on classification procedures, see <http://www.carnegiefoundation.org/classification/>.

Doctorate-Granting Institutions

Doctoral/Research Universities—Extensive: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. During the period studied, they awarded 50 or more doctoral degrees per year across at least 15 disciplines.

Doctoral/Research Universities—Intensive: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. During the period studied, they awarded at least 10 doctoral degrees per year across three or more disciplines, or at least 20 doctoral degrees per year overall.

Master's Colleges and Universities

Master's Colleges and Universities I: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. During the period studied, they awarded 40 or more master's degrees per year across three or more disciplines.

Master's Colleges and Universities II: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. During the period studied, they awarded 20 or more master's degrees per year.

Baccalaureate Colleges

Baccalaureate Colleges—Liberal Arts: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. During the period studied, they awarded at least half of their baccalaureate degrees in liberal arts fields.

Baccalaureate Colleges—General: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. During the period studied, they awarded less than half of their baccalaureate degrees in liberal arts fields.

Baccalaureate/Associate's Colleges: These institutions are undergraduate colleges where the majority of conferrals are below the baccalaureate level (associate's degrees and certificates). During the period studied, bachelor's degrees accounted for at least ten percent of undergraduate awards.

Associate's Colleges

These institutions offer associate's degree and certificate programs but, with few exceptions, award no baccalaureate degrees. This group includes community, junior, and technical colleges. This group includes institutions where, during the period studied, bachelor's degrees represented less than 10 percent of all undergraduate awards.

Specialized Institutions

These institutions offer degrees ranging from the bachelor's to the doctorate, and typically award a majority of degrees in a single field. The list includes only institutions that are listed as separate campuses in the 2000 Higher Education Directory. Specialized institutions include:

Theological seminaries and other specialized faith-related institutions: These institutions primarily offer religious instruction or train members of the clergy.

Medical schools and medical centers: These institutions award most of their professional degrees in medicine. In some instances, they include other health professions programs, such as dentistry, pharmacy, or nursing.

Other separate health profession schools: These institutions award most of their degrees in such fields as chiropractic, nursing, pharmacy, or podiatry.

Schools of engineering and technology: These institutions award most of their bachelor's or graduate degrees in technical fields of study.

Schools of business and management: These institutions award most of their bachelor's or graduate degrees in business or business-related programs.

Schools of art, music, and design: These institutions award most of their bachelor's or graduate degrees in art, music, design, architecture, or some combination of such fields.

Schools of law: These institutions award most of their degrees in law.

Teachers colleges: These institutions award most of their bachelor's or graduate degrees in education or education-related fields.

Other specialized institutions: Institutions in this category include graduate centers, maritime academies, military institutes, and institutions that do not fit any other classification category.

Tribal Colleges and Universities

These colleges are, with few exceptions, tribally controlled and located on reservations. They are all members of the American Indian Higher Education Consortium.

Index