EDUCAUSE Core Data Service

Fiscal Year 2007 Summary Report

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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 hundreds of colleges and universities that complete and submit the core data survey annually. Without their support and willingness to participate, the service and this annual summary report would not exist. We appreciate the time and effort these campuses expend 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 Core Data Service.

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 and continue to refine 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; provide statistical analyses such as means and medians on the fly for selected populations; calculate commonly sought ratios for benchmarking; and provide built-in trend analysis capability. EDUCAUSE is indebted to Becky Granger for continuing to improve and refine these important tools from year to year.

Despite the many help features and the availability of the Core Data Service tutorial, individual staff support is still required to assist participants. The EDUCAUSE Member Services team of Jan Brescia, Tammy Burkhart, Linda Kelley, Kate McTurk, and Kristyn Robinson does an admirable job of fielding and referring questions, technical issues, and other problems.

Finally, we would like especially to acknowledge the invaluable statistical analyses conducted by our analyst, Robert Nicolich. These analyses added rigor and understanding to the interpretation of the data.

Understanding the Core Data Service

Higher education continues to experience 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.

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 arose through the years to meet this need. (See Appendix A for the historical context from which the current EDUCAUSE Core Data Service arose.) Seven years ago EDUCAUSE determined the need for a somewhat different approach from existing data collection efforts and thus developed and launched a program called the EDUCAUSE Core Data Service (CDS), which consists of

- an annual survey instrument that collects data about information technology environments and practices on (primarily) member campuses;
- a 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 campuses; and
- an annual, publicly available summary report about campus IT environments based on data contributed through the survey.

This *EDUCAUSE Core Data Service Fiscal Year 2007 Summary Report* is the sixth report published as part of the CDS program.[2] Before delving into the five major sections that follow this introductory section (each of which parallels and summarizes data from a section of the core data survey), we encourage you to read on to fully understand the CDS program, especially its underlying principles, appropriate use policies, and methodology (including use of Integrated Postsecondary Education Data System, or IPEDS,[3] data), and how data are analyzed and presented in this summary report.

Underlying CDS Principles

A defining characteristic of the EDUCAUSE CDS is its collection and presentation of data *identifiable by institution* in the interactive database component of the service. The level of participation in the program is evidence that the value of being able to select a specific comparison group of similar, peer institutions outweighs any reluctance participants might have to disclose identifiable data. (See Appendix B for a list of 2007 survey participants.) The willingness of the community to share what until the inception of the CDS had been largely unavailable financial data has allowed this service to approach the status of a breakthrough application.

A second fundamental principle of the program is that only those campuses that complete and submit the survey each year are eligible to log into the interactive database site. Nonparticipating campuses do not have access, nor do corporations, researchers, agencies, associations, the media, or the general public. However, EDUCAUSE feels an obligation to provide some overall data analysis to member campuses that do not participate, as well as to the vendor community that are supportive of the association, and thus we publish this annual summary report for distribution on a complimentary basis to the entire EDUCAUSE membership.

A third important element of the CDS is its appropriate use policy and the efforts expended to ensure that all survey participants are well informed about the conditions

and terms of use of the data captured through the CDS survey. Access to the database service is not only restricted to participating campuses but further restricted to individuals on those campuses who have been authorized by their campus to use the database. Such authorized access is provided through an EDUCAUSE username and password issued to authenticated individuals recognized by the CDS system. The CDS has a strong copyright and appropriate use policy (see http://net.educause.edu/coredata/use_policy.asp) expressly to protect the information of participating institutions. Anyone authorized to access the database must "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 CDS, and EDUCAUSE may take legal action against any party who accesses or uses database content or data without authorization.

Finally, a note about the trust relationships and partnership we enjoy with our corporate members: While use of the CDS database is restricted to campuses that complete the survey, thus de facto precluding vendor participation, some of the campus individuals who complete the survey are in fact employees or contractors with corporations that have facilities management contracts with their campuses. We contacted the companies known to offer such services (Blackwell Consulting Services, CampusWorks, SunGard Higher Education), and they graciously agreed in writing not to seek access to the service or survey data, realizing that it is strictly for campus consumption for planning and institutional analysis. Further, they agreed that if any data came 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.

Methodology

All EDUCAUSE member campuses that have an IPEDS unit ID number as well as international member institutions (which do not have such numbers) are invited to complete the core data survey through an e-mail message sent annually in January to the primary representative at each member campus. We also invite schools that are not members of EDUCAUSE to participate in the CDS if they are members of affinity groups (such as the Council of Independent Colleges, the League for Innovation in the Community College, and others) as well as any campus that expresses an interest in completing the survey. In January 2008, more than 2,600 campuses were invited to participate in the 2007 survey.

In the case of an institution with a Carnegie classification[4] of "system," individual member campuses within the system are invited to complete the survey, provided they have an IPEDS unit ID number. A multicampus system with a single unit ID is invited to complete the survey as a single institution. System or district offices (except those that have a single IPEDS unit ID) are not eligible to complete the survey; however, if 40% of the campuses within the system or district complete the survey, the system or district office becomes eligible to access the interactive database service.

Access to the survey is provided through an authorization system that gives such access initially to the individual designated as the primary or key representative in the EDUCAUSE records database at the time the invitation to participate is extended. That individual is 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 are submitted electronically through an easy-to-use web-based interface that enables respondents to answer the approximately 50 questions over time; that is, they can enter data, save them, and return to the site at another time to enter more data or change data already entered. Participants are given about two months to submit the survey, which can take anywhere from several hours to several days to complete, depending on the ready availability of the campus data requested. (See Appendix C for a copy of the 2007 survey.) Note that all financial data sought through the core data survey are for the previous fis-

cal year, so actual funding/expenditures rather than projected budgets are captured. For example, the survey launched in January 2008 sought financial data for fiscal year 2006–2007 and thus is referred to as the 2007 core data survey. Once a campus submits its survey, data cannot be changed except by special request, for example, in the case of incorrect data having been submitted.

Embedded throughout the survey are a variety of pop-up and linked help notices, electronic navigation to a glossary of terms and definitions, and other aids to clarify questions and to obtain consistent responses. (A list of the glossary terms appears in Appendix D of this summary report.) An audit system provides red-flag messages to respondents if inconsistent data are entered, giving the respondent an opportunity to correct data after viewing an explanation of why the data appear to be problematic.

Use of IPEDS Data

EDUCAUSE information systems enable automatically matching respondents with selected corresponding IPEDS data that are imported annually into EDUCAUSE database records, so these elements do not have to be entered by the CDS respondent. IPEDS data used by the CDS application include total student headcount, type of institutional control (public or private), and Carnegie classification for each institution. Using the student headcount data from IPEDS, EDUCAUSE derives the full-time equivalent (FTE) student enrollment by summing the total of all full-time students and one-third the total of all part-time students. Demographic data in the 2007 CDS are based on 2006 IPEDS data, the latest available. (Note that international participants, for whom IPEDS data are not available, may provide corresponding demographic data for entry into EDUCAUSE database records to be matched in the CDS database.)

In previous years, IPEDS data for faculty FTE and total institutional expenditures (which are also imported into EDUCAUSE database records) were posted in the demographic section of the CDS database service, and faculty FTE data were used to create ratios that were included in two tables in the first summary report. Subsequent to the publication of that 2002 report, we learned of problems related to the way these data are reported to IPEDS that preclude their use in calculating CDS ratios. As a result, we no longer post faculty FTE or total institutional expenditures in the demographic section of the service. (For details, see the CDS announcement "Caution Advised in Using IPEDS Data for Ratios – March 2, 2004" at http://net.educause.edu/apps/coredata/news/).

Beginning with the 2005 core data survey, two additional data points have been requested (albeit on an optional reporting basis) as part of the agreement to merge the CDS with the COSTS Project (see Appendix A). These data points are needed to calculate benchmarks that had been available to COSTS Project participants but not previously available through the CDS database service. The requested data are total number of headcount employees (including faculty) reported the previous year to IPEDS and total campus expenses (not including financial aid) reported the previous year to IPEDS. Those who answer the latter question are also asked to indicate which accounting standards their campus used (FASB, Financial Accounting Standards Board, or GASB, Governmental Accounting Standards Board). Collection of these self-reported IPEDS data has enabled the incorporation of seven additional benchmarks into the interactive database service component of the CDS for the past three years.

How Data Are Presented in This Summary Report

Data for this summary report are reported by 2000 Carnegie Classification, but we have combined like Carnegie categories for ease of reporting and for manageable data presentation in the tables. In doing this, we ensure that by combining groups we do not lose important distinctions. Appropriate statistical tests are conducted with a large number of variables in the data to determine if consistent and meaningful differences exist between like categories. Within the Carnegie categories, tests are run to determine if such categories

can be combined. In all these sets of analyses, for the sixth consecutive year, 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 report—with 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 2000 Carnegie classifications are included in Appendix E. 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.

The purpose of this report is to provide aggregate data in simple form for those who do not have access to the interactive database service. 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. Keep in mind that the database service component of the CDS allows for viewing data much more discretely. The service offers filters, sorting tools, graphing tools, the ability to see trend data comparing last year's and this year's data (see details about trend analyses below), and a sixth section that provides automatically generated ratios in 14 areas.

We urge readers who have access to the database service to use the service rather than this report for benchmarking purposes for a more refined and accurate picture than the tables in this report can provide.

Core Data Survey Participation

A total of 994 institutions had submitted the 2007 survey when we froze the data set in May 2008 to do the analyses for this summary report. Submissions continued to come in throughout the late spring and summer and likely will continue for the rest of the 2008 calendar year. As of August 2008, as this publication was being prepared for press, 1,010 campuses had submitted the 2008 survey.

As in previous years, there is a high level of participation in the CDS among statewide and multicampus systems and districts. Many system offices encourage the fullest participation of their member campuses. This year, once again nearly three dozen systems or districts achieved more than 30% participation in the CDS (with several reaching or approaching 100%).

Trend Analyses

An electronic set of tools is available to those who use the interactive database service component of the CDS so that they can see trends within specifically defined peer groups or other categories of analysis for the past two years. Using these tools, users can determine if they want to compare the data of all 2006 and 2007 survey participants or if they want to compare data of just those institutions that completed both of the surveys (that is, institutions in the matched data set). In the latter case, actual change is more confidently ascertained, whereas in the analyses that would compare all participants from each year, some of the change is likely to result from a different sample, possibly leading to false conclusions. In this summary report, the narrative attempts to highlight key trends when they are seen to be important, but only comparing data for the 785 schools that are in both this year's and last year's frozen data sets.

When comparing data for all of these 785 schools, finding statistical significance is likely to occur quite frequently because of the large sample sizes. Many of the most interesting changes do not occur across the board, however, but are patterns specific to community colleges, research institutions, or other Carnegie groups. When examining those subgroups within the matched data set, sample

sizes become fairly small, and statistical significance is harder to find. In some of those cases, the narrative in this summary report will note these changes (which may or may not be due to chance), even though statistical significance was not found, simply to hypothesize a possible trend of special interest.

The Fallacy of Relying Only on Input Measures

We began this introductory section 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 themselves. But the problem with IT benchmarks of any kind—and the CDS is 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 also 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.[5]

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

- First, this kind of application is 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 CDS are necessary but not sufficient to achieve the ultimate goal of defining standards of optimal achievement of goals.
- Third, the CDS database service 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 interactive 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 CDS 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 promote more effective IT management overall 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 CDS 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, and public versus private control, 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 CDS.

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 program 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. The 2002, 2003, 2004, 2005, 2006, and 2007 CDS summary reports are available for free download in PDF on the EDUCAUSE website at http://www.educause.edu/coredata/. Print copies of this 2007 report are available for $10 each as long as the supply lasts.
3. 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 in the United States. IPEDS collects institution-level data in such areas as enrollments, program completions, faculty, staff, and finances. IPEDS data reporting requires the extensive effort of a variety of offices on any campus, and this is the "official" information the college or university stands behind, used by the federal government.
4. In 1970, the Carnegie Commission on Higher Education developed a classification of colleges and universities to support its program of research and policy analysis. Derived from empirical data on colleges and universities, the "Carnegie Classification" was published for use by other researchers in 1973 and subsequently updated in 1976, 1987, 1994, 2000, and 2005. With the 2005 revision, the single classification system was replaced by a set of multiple, parallel classifications. The original classification framework—now called the basic classification—has also been substantially revised. For details about those revisions, see http://www.carnegiefoundation.org/classifications/index.asp. This CDS summary report uses the basic classification system from 2000, for the sake of simplicity.
5. Hawkins and Barone, op. cit., p. 133.

ONE

IT Organization, Staffing, and Planning

The first section of the 2007 core data survey included questions that can be clustered into three areas: campus information technology 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?" The title for this highest ranking IT administrator continues to be anything but consistent or predictable! Of the 994 institutions whose data were included in the frozen data set upon which the analyses in this 2007 summary report are based, 284 unique titles were reported (26 more than in last year's frozen data set of 933 institutions), reflecting many combinations and permutations of every level (vice president, assistant/associate vice president, dean, director, and others) and area descriptor (information systems, services, or technology, and others). These various combinations and permutations often include an addendum such as "and CIO" or "and CTO."

The most commonly reported title was in fact chief information officer (CIO), which was reported either as a unique title (23.2%) or as part of a broader title (19.1%) for a total of 42.3% of ALL responses, up from 40.6% last year. Also, this year 39 additional campuses reported that their top IT administrator's title is or includes chief technology officer (CTO). CIO as a unique title was followed by vice president for information technology (3.9%) and director of information technology (2.9%) as the most common titles.

Table 1-1 shows percentages of the various

Table 1-1
Title of Highest Ranking IT Administrator

	ALL	DR	MA	BA	AA	OTHER
VP, Deputy VP, Vice Chancellor, Vice Rector	23.3%	41.7%	22.6%	16.8%	20.1%	16.2%
CIO	31.7%	40.6%	35.9%	25.9%	23.6%	30.6%
CTO	4.5%	2.8%	5.6%	6.6%	2.9%	4.0%
Vice Provost, Assistant or Associate Vice Provost/ VP/VC	8.5%	10.0%	12.2%	9.1%	5.2%	3.5%
Director, Dean, Executive Director	28.5%	3.9%	22.6%	38.1%	39.7%	41.0%
Assistant or Associate Director/ Dean	0.6%	0.0%	0.4%	0.5%	1.7%	0.6%
Head, Manager, Other	2.9%	1.1%	0.7%	3.0%	6.9%	2.9%

Table 1-2
Percentage of Top IT Administrators Reporting to Various Campus Officers

	ALL	DR	MA	BA	AA	OTHER
President/Chancellor/CEO	31.3%	29.4%	30.7%	33.0%	37.4%	26.0%
Highest Ranking Academic Officer (Provost, Academic VP, Dean)	23.2%	32.2%	29.3%	28.9%	10.9%	10.4%
Highest Ranking Administrative Officer (Administrative VP, Executive VP)	24.6%	17.8%	19.6%	15.2%	32.2%	42.8%
Highest Ranking Business Officer (Business Officer, CFO)	12.1%	5.0%	14.1%	17.8%	12.6%	9.2%
Second-Level Academic Officer (Assistant or Associate Provost/VP)	1.2%	2.2%	1.1%	0.5%	0.0%	2.3%
Second-Level Administrative Officer (Assistant or Associate Administrative VP)	1.0%	2.2%	1.1%	0.5%	0.6%	0.6%
Jointly to President/Chancellor/CEO and Chief Academic Officer	1.0%	2.2%	1.1%	0.5%	0.6%	0.6%
Jointly to Chief Academic Officer and Chief Administrative or Financial Officer	1.9%	5.6%	1.5%	1.0%	0.6%	1.2%
Other	3.6%	3.3%	1.5%	2.5%	5.2%	6.9%

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 presidential title is most common in research universities (DR), while director is the dominant title in liberal arts colleges (BA), associate's colleges (AA), and institutions in the OTHER category. In MA institutions, the title of CIO was most often reported.

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 reporting to various officials on their campuses, once again broken out by Carnegie class.

The percentage of IT leaders reporting directly to the president is significantly higher for associate's colleges, while there were no significant differences in the percentage of IT leaders reporting to the highest ranking academic officer or the president for DR, MA, and BA institutions. Few respondents reported that their top IT administrator reports below the level of the highest ranking academic or administrative officer.

Although nearly 42% of the top IT administrators at doctoral institutions carry the title vice president, vice chancellor, or something equivalent, only about 29% report to the president or chancellor. It is likely that their title reflects a level of significance and seniority within the executive leadership team, not necessarily a structural reporting relationship or an indication of who conducts this person's performance appraisal.

While reporting relationships are potentially interesting, who actually does the IT leader's performance evaluation is less important than whether 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

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	49.2%	56.7%	45.9%	46.7%	56.9%	41.6%
No	50.8%	43.3%	54.1%	53.3%	43.1%	58.4%

strategic directions and policy and to work with other senior officers in 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 administrators sitting on an executive council is substantially greater than the percentage of those who actually report to the president.

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

There is a rather remarkable consistency in the responses to this question, with the same areas ranked in the top 14 (areas checked by more than 70% of ALL respondents) of 24 functional areas, regardless of Carnegie classification. These areas, in descending order, are:

- Desktop Computing Support/User Support Services/Training/Help Desk
- Administration of IT Organization
- Network Infrastructure and Services
- IT Security
- IT Policy
- Administrative/Enterprise Information Systems
- Operations/Data Center
- Enterprise Infrastructure/Identity Management
- Student Computing
- Web Support Services
- Telephony
- Academic Computing
- IT Planning and Budgeting
- Instructional Technology

While not all Carnegie groups had precisely this order, the differences were insignificant, as shown in Table 1-4. However, if you examine the table more carefully by rank ordering the functions that report to the top IT administrator and then look at these rankings across the Carnegie groups, an interesting pattern emerges. The rankings indicate that AA and MA institutions are the most similar to each other, but interestingly the MA schools were also similar to BA and DR schools, suggesting that MA schools are the most typical of higher education as a whole with regard to IT reporting structures.

The following functional areas (listed in rank order) showed a significant increase from last year in reporting to the top IT administrator for ALL schools:

- IT Planning and Budgeting
- Student Computing
- Academic Computing
- Research Computing
- Enterprise Infrastructure/Identity Management
- Multimedia Services
- Distance Education
- Telephony
- Desktop Computing Support/User Support Services/Training/Help Desk
- IT Policy

IT Planning and Budgeting showed a particularly large increase from last year, and that change was significant across all four Carnegie groups.

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.

Table 1-4
Functions Reporting to the Top IT Administrator

	ALL	DR	MA	BA	AA	OTHER
Academic Computing	82.6%	85.6%	85.9%	88.8%	80.5%	69.4%
Administration of IT Organization	98.4%	100.0%	99.3%	97.5%	97.1%	97.7%
Administrative/Enterprise Information Systems	95.7%	96.1%	94.8%	95.4%	96.6%	96.0%
Computer Store	13.7%	24.4%	10.4%	17.3%	2.9%	14.5%
Desktop Computing Support/User Support Services/Training/Help Desk	99.0%	100.0%	98.9%	99.0%	100.0%	97.1%
Enterprise Infrastructure/Identity Management	90.4%	97.2%	90.4%	86.3%	84.5%	94.2%
Distance Education	27.2%	16.1%	38.1%	20.8%	31.6%	24.3%
Institutional Research	7.8%	6.7%	9.6%	6.1%	10.3%	5.8%
Instructional Technology	73.0%	77.2%	75.2%	84.8%	66.7%	58.4%
IT in an Affiliated Hospital	2.9%	3.9%	0.4%	0.0%	2.9%	9.2%
IT Planning and Budgeting	78.7%	74.4%	81.1%	81.2%	78.2%	76.9%
IT Policy	97.3%	98.9%	95.9%	98.5%	96.6%	97.1%
IT Security	98.0%	98.9%	97.4%	98.0%	98.9%	97.1%
Library	13.7%	7.8%	15.9%	17.8%	11.5%	13.9%
Mailroom	4.8%	2.2%	3.0%	8.6%	6.3%	4.6%
Multimedia Services	65.0%	66.7%	70.0%	71.6%	54.6%	58.4%
Network Infrastructure and Services	98.3%	99.4%	98.5%	98.5%	98.3%	96.5%
Operations/Data Center	94.1%	98.3%	94.1%	93.4%	92.0%	92.5%
Print/Copier Services	31.1%	20.6%	23.0%	38.6%	36.8%	40.5%
Research Computing	35.4%	63.3%	30.7%	32.0%	10.3%	42.8%
Student Computing	83.8%	84.4%	86.3%	89.3%	79.9%	76.9%
Technology R&D/Advanced Technology	55.1%	62.8%	57.0%	58.9%	47.1%	48.0%
Telephony	83.1%	91.7%	84.4%	72.1%	83.3%	84.4%
Web Support Services	83.8%	88.9%	83.3%	80.2%	78.7%	88.4%
Other Function	12.9%	20.0%	15.9%	7.6%	6.9%	12.7%

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 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 core data survey respondents were allowed to assign decimal numbers 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 for fiscal year 2006–2007 a given individual spent 50% of her time doing network architecture, 30% of her time doing database work in administrative computing, and the remainder in security, the numbers 0.5, 0.3, and 0.2, respectively, would be appropriate to enter into those functional area cells for that individual.

The deployment of staff and student

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

	ALL	DR	MA	BA	AA	OTHER
Administration of IT Organization, IT Planning, Technology R&D	5.3	14.2	3.4	1.8	1.8	6.3
Administrative/Enterprise Information Systems	12.6	35.3	7.5	3.5	3.3	16.5
Desktop Computing Support, User Support Services, Training, Computer Store	8.5	20.0	5.7	3.3	3.9	11.4
Enterprise Infrastructure and Services, Identity Management	4.0	11.7	2.0	0.8	0.8	5.7
Help Desk	3.8	7.9	3.0	1.4	1.7	5.3
IT Policy	0.4	0.9	0.3	0.2	0.3	0.6
IT Security	1.3	3.5	0.8	0.4	0.5	1.7
Instructional Technology, Multimedia Services, Student Computing	6.8	16.8	5.3	2.7	3.5	6.9
Network Infrastructure and Services	5.4	14.7	3.5	1.9	1.9	6.4
Operations, Data Center, Print/ Copier Services, Mailroom	4.9	15.3	2.3	1.0	1.3	5.9
Research Computing, Academic Computing	2.0	6.4	0.8	0.6	0.5	2.2
Telephony	4.0	13.1	2.1	0.8	0.9	3.9
Web Support Services	2.5	5.3	1.9	1.0	1.2	3.5
Other Function	4.7	8.0	2.3	1.5	3.4	6.8

employees in these functional 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 student employees, respectively, devoted to these various functions in the centralized campus IT organization. Tables 1-7 and 1-8 show the percentage of the total IT staff and student employees, respectively, devoted to each function, thus controlling to some extent for size differences across Carnegie classes.

Looking at Table 1-7, there appears to be a fairly consistent distribution of staff among the various functions across all Carnegie groups, with the greatest percentage of staff being allocated to Administrative/Enterprise Information Systems followed by the functional area that encompasses Desktop Computing Support, User Support Services, Training, and Computer Store. This was true for ALL respondents as well as all Carnegie groups except AA schools, where the order was reversed, that is, the highest percentage of staff are allocated to the support area, with administrative information systems ranking second. Ranking the next five functional areas for ALL respondents in descending order, staff overall are allocated as follows:

- Instructional Technology, Multimedia Services, Student Computing
- Network Infrastructure and Services
- Administration of IT Organization, IT Planning, Technology R&D
- Help Desk
- Operations, Data Center, Print/Copier Services, Mailroom

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

	ALL	DR	MA	BA	AA	OTHER
Administration of IT Organization, IT Planning, Technology R&D	0.3	1.0	0.2	0.1	0.2	0.1
Administrative/Enterprise Information Systems	0.2	0.5	0.1	0.1	0.0	0.1
Desktop Computing Support, User Support Services, Training, Computer Store	2.4	5.4	2.7	1.9	0.9	1.0
Enterprise Infrastructure and Services, Identity Management	0.1	0.4	0.1	0.0	0.0	0.1
Help Desk	2.7	6.0	2.8	2.0	0.7	1.6
IT Policy	0.0	0.0	0.0	0.0	0.0	0.0
IT Security	0.1	0.2	0.1	0.0	0.0	0.0
Instructional Technology, Multimedia Services, Student Computing	4.6	13.1	5.4	1.9	0.9	1.2
Network Infrastructure and Services	0.4	1.3	0.5	0.1	0.0	0.2
Operations, Data Center, Print/ Copier Services, Mailroom	0.3	1.1	0.2	0.1	0.1	0.2
Research Computing, Academic Computing	0.4	1.1	0.5	0.2	0.2	0.2
Telephony	0.3	1.1	0.4	0.1	0.0	0.0
Web Support Services	0.3	0.7	0.5	0.2	0.1	0.1
Other Function	0.8	1.5	0.8	0.6	0.2	0.2

Looking at Table 1-8, it is not surprising to find the highest percentages of students employed by the centralized campus IT organization allocated to three areas: Help Desk; Instructional Technology, Multimedia Services, Student Computing; and Desktop Computing Support, User Support Services, Training, Computer Store. How these three are ranked varies among Carnegie groups, with doctoral universities employing the greatest percentage of students in the instructional technology area, BA schools employing the highest percentage of students on the help desk, and AA schools employing the highest percentage of students in desktop and user support.

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 centralized IT staff number (summing the IT staff numbers in all of the functional areas previously described) is more meaningful when similar Carnegie classes are not grouped but separated out as in Table 1-9. The rather dramatic differences between the Doctoral Extensive and Doctoral Intensive schools shown are of particular interest. Note as well that MA I schools have significantly higher staffing levels than MA II schools, and BA LA schools have significantly higher staffing levels than BA GEN schools.

Looking at the total number of centralized FTE IT staff this year compared to last year for the 785 institutions in the matched data set, there was a significant mean increase of 1.98

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

	ALL	DR	MA	BA	AA	OTHER
Administration of IT Organization, IT Planning, Technology R&D	9.1%	8.4%	9.0%	9.7%	9.1%	9.4%
Administrative/Enterprise Information Systems	17.8%	20.1%	18.3%	17.5%	14.0%	19.0%
Desktop Computing Support, User Support Services, Training, Computer Store	16.0%	12.7%	15.1%	16.5%	20.9%	15.6%
Enterprise Infrastructure and Services, Identity Management	5.3%	7.4%	4.7%	4.1%	3.8%	6.7%
Help Desk	7.9%	5.1%	8.7%	8.4%	8.8%	8.2%
IT Policy	1.1%	0.6%	1.0%	1.3%	1.6%	1.4%
IT Security	2.3%	2.1%	2.1%	2.2%	3.0%	2.5%
Instructional Technology, Multimedia Services, Student Computing	11.0%	10.2%	12.5%	11.7%	11.2%	8.2%
Network Infrastructure and Services	9.4%	8.9%	9.5%	10.4%	9.4%	8.8%
Operations, Data Center, Print/Copier Services, Mailroom	5.7%	8.3%	5.0%	4.7%	4.8%	6.2%
Research Computing, Academic Computing	2.7%	3.3%	2.2%	2.7%	2.8%	2.6%
Telephony	5.0%	7.5%	4.9%	4.3%	4.1%	4.0%
Web Support Services	5.0%	3.5%	5.3%	5.5%	5.2%	5.4%
Other Function	5.5%	4.5%	5.0%	5.4%	7.2%	6.8%

FTE staff for ALL responding institutions. This was the second year in a row of having a significant increase. While each Carnegie group also showed a mean increase in total centralized IT staff members, the difference was significant for all Carnegie groups except MA I and BA GEN.

Finally, in looking at these various tables related to staffing levels, the differences noted among Carnegie groups may be due to the available funding or the complexity of the institution. 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.

Centralized Versus Decentralized Staffing

Table 1-10 shows the average number of centralized FTE IT staff for each of the Carnegie groupings in the first column, the average total campus FTE IT staff (derived from adding the total of centralized staff to the number of distributed/departmental IT staff reported in the survey) in the second column, and the percentage of the total campus IT staff that the centralized IT staff represent in the third column.[3] Clearly the number of distributed/departmental IT staff increases at a significant rate as the complexity of the institution increases, just as it has for the past four years, with the percentage of distributed

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

	ALL	DR	MA	BA	AA	OTHER
Administration of IT Organization, IT Planning, Technology R&D	1.7%	2.9%	1.6%	1.4%	1.3%	1.2%
Administrative/Enterprise Information Systems	1.2%	1.4%	0.9%	1.1%	1.3%	1.4%
Desktop Computing Support, User Support Services, Training, Computer Store	23.5%	17.8%	20.8%	26.3%	32.5%	24.5%
Enterprise Infrastructure and Services, Identity Management	0.8%	1.1%	0.9%	0.3%	0.0%	1.6%
Help Desk	31.1%	22.7%	28.4%	37.2%	33.1%	38.4%
IT Policy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
IT Security	0.6%	1.3%	0.7%	0.0%	0.0%	0.7%
Instructional Technology, Multimedia Services, Student Computing	27.2%	36.8%	30.4%	21.7%	21.4%	19.5%
Network Infrastructure and Services	2.8%	3.8%	3.5%	2.2%	1.8%	2.1%
Operations, Data Center, Print/ Copier Services, Mailroom	1.8%	2.2%	1.5%	1.9%	1.6%	1.8%
Research Computing, Academic Computing	2.7%	3.2%	2.5%	2.1%	2.7%	3.0%
Telephony	1.9%	2.8%	2.6%	1.8%	0.0%	0.9%
Web Support Services	2.7%	2.3%	3.6%	2.1%	2.4%	2.1%
Other Function	7.0%	3.9%	7.2%	9.6%	11.0%	8.4%

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

	Mean	Median	Minimum	Maximum
ALL	62.7	30.5	1.0	639.0
DR EXT	217.3	182.8	41.6	639.0
DR INT	88.1	81.0	8.0	233.0
MA I	42.0	34.7	4.0	166.5
MA II	18.3	17.0	4.0	50.0
BA LA	24.2	22.5	3.5	64.0
BA GEN	13.8	10.0	2.0	70.0
AA	22.3	13.0	2.2	264.0
OTHER	78.7	30.5	1.0	598.0

Table 1-10
Centralized FTE IT Staff as a Percentage of Total Campus FTE IT Staff

	Mean Number of Central FTE IT Staff	Mean Number of Total Campus FTE IT Staff	% Central FTE IT Staff
ALL*	57.1	92.4	81.6
DR EXT	211.3	432.1	55.9
DR INT	86.4	135.0	70.9
MA I	40.8	51.4	84.1
MA II	18.3	20.9	89.9
BA LA	24.0	27.3	89.4
BA GEN	13.6	15.9	88.9
AA	22.4	26.1	88.8
OTHER	69.0	105.5	80.0

* *N* = 885

staff greatest at DR EXT campuses, at 44.1%.

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 centralized IT staff concern themselves more with infrastructure, system-wide applications, general support, and so forth. In years past, there was a movement toward a more decentralized support model in all Carnegie groupings, but for the second consecutive year there were no significant changes in the percentages of distributed support.

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, not just descriptive statistics. Ratio analysis has long been a standard in examining business performance, and the CDS data-sharing service provides a variety of key ratios that allow for effective comparison of IT data.

In terms of staffing, we are able to calculate a ratio for the number of FTE students supported per centralized IT staff member, derived by dividing the number of FTE students (a number calculated from data reported by campuses to IPEDS[4]) by the number of centralized FTE IT staff (derived from the total of the numbers entered into the survey question about functional area support). This ratio is shown in Table 1-11.

Looking at the matched data set for 2006 and 2007, the number of FTE students supported per centralized IT staff member decreased significantly. There was a net decrease for all groups, but a statistically significant decrease was only found for DR and BA schools. This might suggest that the pressure to provide support for more students is subsiding, since this is the second consecutive year with decreases on this ratio.

This same pattern was seen in looking at Table 1-12, which shows headcount supported per centralized FTE IT worker. On the survey, respondents were asked to enter the total number of headcount employees (including faculty) that their campuses last reported to IPEDS. In addition, we imported into the CDS database the total student headcount number campuses reported to IPEDS for the fall of 2006. Thus we were able to derive a total campus headcount that represents all employees, including faculty, plus all students, whether part time or full time.[5] Using these data points, it was possible to derive a ratio of headcount individuals supported per centralized FTE IT worker (with IT worker defined as including both staff and student employees). For ALL institutions, there

Table 1-11
FTE Students Supported per Centralized FTE IT Staff Member

	ALL	DR	MA	BA	AA	OTHER
Mean	154.1	123.2	162.0	125.6	228.7	131.1
Median	137.3	118.4	148.1	112.0	194.2	124.5
Minimum	0.2	25.6	22.9	26.0	51.1	0.2
Maximum	1,518.0	373.5	471.5	804.5	1,518.0	607.5

Table 1-12
Headcount Supported per Centralized FTE IT Worker

	ALL*	DR	MA	BA	AA	OTHER
Mean	191.3	150.3	172.3	126.2	364.1	182.3
Median	151.5	142.8	151.3	98.2	303.6	156.2
Minimum	19.3	44.1	41.9	19.3	89.8	24.3
Maximum	2,590.6	433.8	788.9	1,125.6	2,590.6	1,042.0

**N* = 706

Table 1-13
Separate Salary Scales for IT Professionals

	ALL	DR	MA	BA	AA	OTHER
Yes	32.4%	45.6%	35.6%	22.3%	23.0%	34.7%
No	67.6%	54.4%	64.4%	77.7%	77.0%	65.3%

was a significant decrease in 2007 compared to 2006, with a mean of 4.37 people fewer supported per centralized FTE IT employee. A decrease was found for all Carnegie groups except AA institutions. AA institutions support the most and BA institutions the fewest number of individuals per staff member.

Staffing Practices

The CDS 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, 32.4% of ALL respondents reported having separate salary scales for IT professionals, which did not change significantly from the previous year. Table 1-13 indicates that this practice is employed to a greater extent among DR and MA institutions (45.6% and 35.6%, respectively). Alternatively, participants were asked if their campuses use either separate IT job titles *or* a broadband IT classification and compensation system. Table 1-14 shows that over 65% of ALL respondents use one of these approaches, with a notably higher percentage of "yes" responses by doctoral and MA universities. There was a significant increase for ALL institutions from the 2006 survey, but this increase was largely attributable to the DR institutions, which was the only group with a significant change.

Finally, ongoing professional development is critical to recruiting, retaining, 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 centralized FTE IT staff member. Table 1-15 shows a relative consistency in the statistical measures across all Carnegie classes. On average, the amount of money that the centralized campus IT organization budgets annually per IT staff member for training increased significantly from the 2006 to the 2007 survey.

Table 1-14
Separate IT Job Titles or a Broadband IT Classification and Compensation System

	ALL	DR	MA	BA	AA	OTHER
Yes	65.3%	79.4%	69.6%	57.9%	56.9%	60.7%
No	34.7%	20.6%	30.4%	42.1%	43.1%	39.3%

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

	ALL	DR	MA	BA	AA	OTHER
Mean	$1,317	$1,357	$1,171	$1,459	$1,280	$1,382
Median	$1,113	$1,300	$1,000	$1,420	$1,000	$1,040
Minimum	$0	$0	$0	$0	$0	$0
Maximum	$15,000	$4,000	$4,000	$4,823	$5,200	$15,000

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

	ALL	DR	MA	BA	AA	OTHER
Yes	78.9%	71.1%	81.5%	75.1%	88.5%	77.5%
No	21.1%	28.9%	18.5%	24.9%	11.5%	22.5%

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

	ALL	DR	MA	BA	AA	OTHER
Yes	71.3%	75.6%	70.7%	66.0%	75.9%	69.4%
No	28.7%	24.4%	29.3%	34.0%	24.1%	30.6%

This data point continues to bear watching, given the importance of keeping staff up-to-date in skills and providing professional development opportunities for growth and job satisfaction.

IT Planning and Advisory Groups

In reference to IT planning, the core data survey asked whether the campus strategic plan includes strategies and directions for IT and whether the campus has a stand-alone IT strategic plan. As seen in Table 1-16, nearly 80% of ALL respondents indicated that their institutional plans do address IT directions and strategies, which is similar to last year. Furthermore, 71.3% of ALL institutions also have a stand-alone IT strategic plan, as shown in Table 1-17, which is also similar to last year. At least two-thirds of schools in all the Carnegie groups report stand-alone IT plans.

The last question in the first section of the survey requested data on the various groups that provide feedback about campus IT strategies. Results are reported in Table 1-18. Respondents could mark as many responses as were applicable, so the percentages do not total 100% but rather reflect the frequency of usage of each type of advisory group.

The number of institutions that involve varying campus constituents in the development of campus IT strategies is large and growing. The president's cabinet/council, administrative committee, academic/faculty committee, and technology advisory committee provide advice on IT strategy in more than half of ALL responding institutions. Furthermore, there are significant increases from last year in the num-

Table 1-18
Groups Providing Advice on IT Strategy

	ALL	DR	MA	BA	AA	OTHER
Trustee Committee	19.4%	28.9%	20.0%	28.9%	5.7%	11.6%
President's Cabinet/ Council	72.2%	68.3%	74.8%	74.6%	82.8%	59.0%
Administrative Committee	62.4%	78.9%	65.2%	50.8%	58.6%	57.8%
Academic Committee/ Faculty Senate	67.7%	85.0%	74.1%	60.9%	54.0%	61.3%
Technology Advisory Committee	78.8%	86.1%	78.9%	70.1%	79.9%	79.8%
Student Committee	36.3%	55.6%	42.6%	32.5%	22.4%	24.9%
State Agency	17.1%	22.2%	19.6%	7.1%	28.7%	7.5%
System/District Office	18.6%	19.4%	27.8%	8.6%	27.0%	6.4%
Other	12.0%	19.4%	12.6%	8.1%	7.5%	12.1%
No IT Advisory Groups	2.3%	1.1%	1.1%	2.5%	0.6%	6.9%

ber of campuses reporting advice on IT strategy from a president's cabinet/council, system/ district office, student committee, academic/ faculty committee, administrative committee, and trustee committee.

One trend we are watching is the percentage of campuses that have and use a trustee committee for advice on IT strategies. This is the case at nearly 29% of doctoral universities and BA schools, but at only 5.7% of associate's colleges. The percentage of ALL institutions using structured trustee advice increased significantly since last year.

Notes

1. Title data were normalized for analysis into the groupings shown in Table 1-1. A vice president or vice chancellor level title that also included CIO or CTO in the title was normalized in the VP/VC category, while any other title that included CIO or CTO was normalized in the CIO or CTO category.
2. Carnegie classifications include more distinct breakouts than shown for most tables. For our analyses, we 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; and 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. Note that not all of the 994 schools in the data set estimated the number of distributed/decentralized staff; thus, this ratio could only be calculated for the 885 schools that provided all the data points needed.
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 in the United States. Among other data, campuses report the number of full-time and part-time undergraduate, graduate, and professional students to IPEDS. The total of those three categories is imported into the CDS database as "total student headcount." The FTE student number is derived by adding the total full-time student number to one-third the total number of part-time students for all three categories.
5. Note that not all of the 994 schools in the data set opted to provide the employee headcount number, and student headcount numbers were not available for many international respondents unless they provided this number when contacted. Thus this ratio could only be calculated for the 706 schools for which all the data were available for this calculation.

TWO

IT Financing and Management

Section two of the 2007 core data survey focused on capturing financial data about information technology on campus for fiscal year 2006–2007 as well as IT management practices, many of which have financial implications. There are six major 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 2007 survey requested data for nine sources of funding (plus an "other funding" option) for the centralized IT organization thought to be applicable to most higher education institutions. In Tables 2-1 and 2-2, these sources are listed with the median values for each of the Carnegie classes presented in thousands of dollars. Median values are used because they present a more accurate reflection of actual campus averages than statistical means, which provide much higher values (especially for doctoral campuses) due to the impact of having megacampus values in the data set. As was the case for the 2006 survey, respondents were required to enter $0 for a source if they did not have any funding from that source (except for "other funding"), to ensure that a value was entered into each field.

Table 2-1 shows median values for all campuses, irrespective of the value entered for each source, including $0. Since many campuses do not have all of the IT funding sources listed, a great number of $0 values appear in this first table. In Table 2-2, the values in each cell are the medians of those respondents who reported revenue other than $0 in a category, thus excluding from the data set the campuses that have no funding from a source. Keep in mind that in the web-based interactive database component of the CDS (available to all who completed the survey), means, medians, highs, and lows are available, and ranges are not as distorted when a more narrowly defined peer group is examined.

Not surprisingly, as institutional complexity increases, so does the amount of funding from each source for the centralized 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 generally the lowest. The relationship between Carnegie class and the dollar amount received by the centralized 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 the campus operating bud-

Table 2-1
Median Amounts of Funding for the Centralized IT Organization
(in 1,000s of Dollars) by Funding Source for All Responding Institutions

Funding Source	ALL	DR	MA	BA	AA	OTHER
Operating appropriation to centralized IT organization	$2,770	$11,165	$2,770	$1,415	$1,139	$4,400
Capital appropriation to centralized IT organization	$200	$400	$115	$150	$100	$646
Revenue generated from student technology fees	$0	$0	$0	$0	$15	$0
Revenue from sale of centralized services (chargeback) to departments	$0	$3,301	$0	$0	$0	$0
Revenue from sale of centralized services to external entities	$0	$0	$0	$0	$0	$0
Net revenue from resale of products to departments, staff, students…	$0	$0	$0	$0	$0	$0
Net revenue from resale of products to external entities	$0	$0	$0	$0	$0	$0
Proportional share of dollar equivalent for system/services provided at system or district level	$0	$0	$0	$0	$0	$0
Compensation paid from an institutional budget	$0	$0	$0	$0	$0	$0
Other funding	$119	$320	$77	$28	$60	$240

get, a source of IT funding reported by nearly 100% of all respondents. This might indicate that, for this most common funding source, the actual dollar amount provided to the centralized IT organization may not only be due to level of overall campus resources but also to different practices in money allocation among institutions in the various Carnegie classes.

Tables 2-1 and 2-2 reveal that doctoral institutions reported higher values for capital appropriations than all other Carnegie groups, with MA and BA higher than AA. This same pattern was also true for operating appropriations and most other dimensions of funding. Compared with last year, there was a significant increase in the appropriation for centralized IT organizations and in the revenue from the sale of centralized services for ALL respondents. Table 2-3 shows the percentages of campuses that have funding from the various sources, indicating that more doctoral than other types of institutions reported significant funding sources beyond operating appropriations, capital appropriations, and technology fees. Particularly, these schools appear to rely much more heavily than schools in all of the other Carnegie groups on charging for centralized services and resale of products to generate revenue for the centralized IT organization.

Means and medians for total centralized IT funding appear in Table 2-4, with dramatic differences between Carnegie groups, as expected. (Note that the total was computed by summing the dollar values entered by respondents for all funding sources.) There was a significant increase in centralized IT funding for ALL institutions since the 2006 survey, and those significant increases were also found for four of the eight Carnegie groups (DR EXT, MA I, BA LA, and AA).

One of the goals of the CDS is to allow for the exploration of these data to see if various business ratios can be found that would

Table 2-2
Median Amounts of Funding for the Centralized IT Organization (in 1,000s of Dollars) for Institutions Not Reporting $0

Funding Source	*N* =	ALL	DR	MA	BA	AA	OTHER
Operating appropriation to centralized IT organization	994	$2,770	$11,165	$2,770	$1,415	$1,139	$4,400
Capital appropriation to centralized IT organization	640	$500	$1,100	$424	$371	$300	$1,200
Revenue generated from student technology fees	352	$622	$1,620	$800	$240	$255	$255
Revenue from sale of centralized services (chargeback) to departments	415	$745	$4,318	$373	$87	$18	$1,000
Revenue from sale of centralized services to external entities	112	$164	$326	$43	$10	$28	$178
Net revenue from resale of products to departments, staff, students…	119	$54	$125	$32	$12	$10	$83
Net revenue from resale of products to external entities	49	$50	$75	$32	$11	$64	$60
Proportional share of dollar equivalent for system/services provided at system or district level	140	$513	$2,469	$712	$483	$285	$188
Compensation paid from an institutional budget	206	$422	$1,821	$470	$396	$283	$200
Other funding	141	$307	$568	$300	$55	$290	$1,537

be both stable and useful. One ratio that we explore uses data reported through IPEDS[1] for FTE students and total centralized IT funding reported through our survey to derive the ratio of mean dollars spent per FTE student. These ratios, shown in Table 2-5, increased from the 2006 to the 2007 survey for all of the Carnegie groups, with those increases significant for MA, BA, and AA institutions.

Centralized IT Personnel Compensation

In Table 2-6, the median total compensation (including benefits) paid by or through the centralized IT organization is shown for four categories of personnel (plus an "other" category) in thousands of dollars. Note, again, that median values of all respondents are presented here, rather than data only for those respondents who did not report $0 for a category of personnel. Thus, as explained earlier for the first question in this section, there are many cells in which $0 is the median because of the great number of respondents who do not employ all of these categories of personnel. Table 2-7 presents data for those institutions that reported compensation other than $0 by category of personnel.

The total compensation numbers for fiscal year 2006–2007 differ significantly by Carnegie classification. As expected, the median compensation paid to each of these personnel 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 centralized IT funding, likely for the same reasons with respect to level of overall campus resources, and related to campus complexity, not merely campus size. Table 2-8 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 calculated the total of expenditures reported for centralized IT staff as a function of total

Table 2-3
Percentage of Central IT Organizations Reporting Various Sources of IT Funding

Funding Source	ALL	DR	MA	BA	AA	OTHER
Operating appropriation to centralized IT organization	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Capital appropriation to centralized IT organization	64.4%	65.0%	59.3%	62.9%	59.8%	78.0%
Revenue generated from student technology fees	35.4%	41.7%	42.6%	19.8%	51.1%	19.7%
Revenue from sale of centralized services (chargeback) to departments	41.8%	85.6%	41.1%	28.9%	8.6%	45.1%
Revenue from sale of centralized services to external entities	11.3%	31.1%	7.8%	2.0%	0.6%	17.3%
Net revenue from resale of products to departments, staff, students…	12.0%	29.4%	7.4%	8.1%	1.7%	15.6%
Net revenue from resale of products to external entities	4.9%	10.6%	3.7%	3.6%	1.1%	6.4%
Proportional share of dollar equivalent for system/services provided at system or district level	14.1%	11.7%	22.6%	7.1%	21.3%	4.0%
Compensation paid from an institutional budget	20.7%	18.9%	24.8%	21.8%	24.7%	11.0%
Other funding	14.2%	23.3%	14.8%	10.2%	13.2%	9.2%

Table 2-4
Means and Medians for Total Centralized IT Funding (in 1,000s of Dollars)

	Mean	Median
ALL	$9,311	$4,145
DR EXT	$33,906	$28,240
DR INT	$12,210	$10,605
MA I	$5,994	$4,515
MA II	$2,532	$2,185
BA LA	$3,406	$2,977
BA GEN	$1,821	$1,291
AA	$3,013	$1,629
OTHER	$11,875	$7,521

centralized IT funding, derived from the earlier question about allocations/revenues from the nine funding sources. (Note that by staff we mean specifically staff and not all types of personnel; that is, student employees, consultants, contractors, and other types of personnel are not included in this number.) Looking at the median percentages of staff compensation to total centralized IT funding in Table 2-9, we see very little difference among all

Table 2-5
Centralized IT Funding per FTE Student

	ALL	DR	MA	BA	AA	OTHER
Mean	$1,551	$1,610	$1,046	$1,451	$708	$3,319
Median	$959	$1,232	$856	$1,169	$656	$1,063

Table 2-6
Median Total Compensation for Various Types of Centralized IT Personnel (in 1,000s of Dollars) for All Responding Institutions

	ALL	DR	MA	BA	AA	OTHER
Staff	$1,860	$9,337	$1,826	$959	$740	$3,500
Students	$60	$341	$103	$50	$5	$11
Consultants	$0	$50	$0	$0	$0	$10
Contractors	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0

Table 2-7
Median Total Compensation for Various Types of Centralized IT Personnel (in 1,000s of Dollars) for Institutions Not Reporting $0

	N =	ALL	DR	MA	BA	AA	OTHER
Staff	993	$1,865	$9,337	$1,850	$959	$740	$3,500
Students	787	$99	$352	$126	$59	$24	$78
Consultants	485	$55	$225	$40	$23	$30	$100
Contractors	369	$75	$205	$54	$38	$29	$123
Other	32	$113	$250	$97	$115	$63	$17

Table 2-8
Percentage of Centralized IT Organizations That Employ Various Categories of Personnel

	ALL	DR	MA	BA	AA	OTHER
Staff	99.9%	100.0%	99.6%	100.0%	100.0%	100.0%
Students	79.2%	95.0%	89.6%	90.9%	56.9%	55.5%
Consultants	48.8%	60.6%	45.2%	42.1%	41.4%	57.2%
Contractors	37.1%	47.2%	33.3%	29.9%	28.2%	49.7%
Other	3.2%	9.4%	2.6%	2.0%	1.1%	1.2%

types of institutions. The ratio developed from these data appears 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. This ratio has been remarkably constant and similar across institutional types for several years of core data surveying.

Another ratio considers centralized IT funding as a percentage of total campus expenditures. Respondents were invited to report the latter amount as an optional data point,

Table 2-9
Percentage of Total Centralized IT Funding Spent on Centralized IT Staff Compensation

	ALL	DR	MA	BA	AA	OTHER
Mean	46.6%	47.0%	46.9%	46.0%	46.4%	46.6%
Median	46.5%	46.6%	47.1%	46.1%	45.6%	45.1%

Table 2-10
Centralized IT Funding as a Percentage of Total Campus Expenses

	Mean	Median
ALL*	5.3%	4.7%
DR EXT	3.8%	3.6%
DR INT	4.7%	4.5%
MA I	5.3%	5.1%
MA II	5.1%	4.9%
BA LA	4.8%	4.5%
BA GEN	5.6%	4.5%
AA	7.4%	7.0%
OTHER	5.3%	4.5%

* *N* = 543

and about 55% of the 994 responding schools chose to do so. This ratio is roughly equivalent to the ratio of centralized IT funding as a percentage of the educational and general budget, a calculation that hasn't been possible since E&G stopped being reported to IPEDS. Calculating this ratio is still problematic in that, depending on which campuses one uses in the comparison group, one may be mixing apples and oranges because of the differences between GASB and FASB reporting practices (Governmental Accounting Standards Board versus Financial Accounting Standards Board).[2] Furthermore, as stated, this optional data point is self-reported by survey respondents without verification.

This was once a very important ratio to help campuses understand their spending habits related to information technology. Even with these cautionary notes taken into consideration, we believe the ratios are worth reporting. Table 2-10 shows relatively consistent results, with ratios for the largest, most complex institutions being somewhat lower because of the enormous size of their denominators. The ratios are highest for AA schools, which are far less complex, focused on instruction, and more cognizant of the critical need for the transformative role of IT in their institutional strategies. There were no significant changes in this ratio compared with the 2006 survey.

Decentralized IT Expenditures

This year's survey again sought to capture data about estimated compensation (including benefits) for IT personnel and other IT-related expenditures (hardware, software, and so forth) outside the centralized IT organization, that is, in administrative offices and academic departments. Such decentralized expenditures vary dramatically based on the type of institution.

As shown in Table 2-11, of ALL responding campuses, about 69% were able to make a reasonable estimate about what was spent on distributed IT staff compensation and about 55% were able to make a reasonable estimate about what was spent on IT outside their centralized IT organizations (including reporting $0 spent) for all other IT-related expenditures. The group most frequently reporting not knowing these amounts was doctoral institutions, in all likeli-

Table 2-11
Percentage of Institutions That Cannot Estimate IT Expenditures Outside the Centralized IT Organization

	ALL	DR	MA	BA	AA	OTHER
IT compensation	30.9%	43.9%	31.9%	27.4%	16.7%	34.1%
Other IT expenditures	44.6%	55.0%	47.8%	45.7%	27.0%	45.1%

Table 2-12
Mean IT Expenditures Outside the Centralized IT Organization (in 1,000s of Dollars) for Institutions Where Such Expenditures Are Known

	N =	ALL	DR	MA	BA	AA	OTHER
IT compensation	687	$2,091	$10,301	$499	$143	$150	$2,300
Other IT expenditures	551	$2,436	$9,680	$693	$118	$257	$4,372

hood because of their complexity and distributed nature. Our assumption is that campuses reporting $0 are essentially completely centralized, with all IT personnel being employed within the centralized IT organization and all IT-related expenditures made at the institutional rather than departmental level.

The average total compensation reported for IT personnel employed outside the centralized IT organization differs considerably by Carnegie class, as seen in the first row of Table 2-12. In fact, comparisons revealed significant differences among all groups except between AA and BA. The second row in this table reflects the expenditures by units outside the centralized IT organization on equipment and all other nonpersonnel items. As with other IT financing data points, the average of IT expenditures outside the centralized IT organization for the most part increased with institutional complexity. The sum of these two numbers (personnel compensation plus all other expenditures) is an estimate of how much is being spent on average by institutions outside their centralized IT organizations, where such expenditures are known or can be estimated.

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. 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 centralized IT personnel compensation as a percentage of total campus IT personnel expenditures, with the latter derived by combining all centralized and decentralized IT compensation numbers reported for schools where such decentralized expenditures were known or could be estimated. As shown in Table 2-13, this percentage is quite high for MA, BA, and AA schools, which appear to have predominantly centralized IT operations. The percentage for doctoral institutions is significantly lower than all other groups. This is essentially an indicator of the extent of decentralization occurring in this type of school. There have been no significant changes in these ratios for the various Carnegie groups over the past few years.

The second ratio looks at total centralized IT funding as a percentage of total campus IT expenditures, with the latter derived from adding total centralized IT organization funding to estimated IT-related personnel and other IT expenditures outside the centralized IT organization, for schools reporting such known expenditures (including $0). The mean and median percentages are shown in Table 2-14. There was no significant change in this ratio from last year.

Table 2-13
Centralized IT Personnel Expenditures
as a Percentage of Total Campus IT Personnel Expenditures

	ALL*	DR	MA	BA	AA	OTHER
Mean	84.4%	64.3%	87.6%	91.0%	91.0%	80.1%
Median	90.3%	64.2%	90.9%	93.1%	100.0%	88.6%

** N = 688*

Table 2-14
Total Centralized IT Funding
as a Percentage of Total Campus IT Expenditures

	ALL*	DR	MA	BA	AA	OTHER
Mean	83.2%	65.1%	88.7%	91.3%	87.3%	78.3%
Median	89.3%	66.4%	91.2%	93.5%	90.8%	86.6%

** N = 502*

Table 2-15
Percentage of Campuses That Charge General Technology Fees

	ALL	DR	MA	BA	AA	OTHER
Yes	52.8%	57.8%	64.4%	39.1%	69.5%	28.3%
No	47.2%	42.2%	35.6%	60.9%	30.5%	71.7%

Table 2-16
Methods of Charging a General Technology Fee

	ALL*	DR	MA	BA	AA	OTHER
Flat fee per year	10.5%	7.7%	9.8%	19.5%	1.7%	26.5%
Flat fee per semester	45.0%	45.2%	51.7%	58.4%	25.6%	46.9%
Flat fee per quarter	2.7%	3.8%	2.9%	2.6%	1.7%	2.0%
Percentage of tuition	31.2%	31.7%	22.4%	0.0%	1.7%	0.0%
Flat fee per credit hour	2.9%	2.9%	5.7%	9.1%	62.8%	18.4%
Other	7.8%	8.7%	7.5%	10.4%	6.6%	6.1%

** N = 525*

Technology Fees

The percentage of schools that reported charging a general student technology fee differs significantly among Carnegie classes, as seen in Table 2-15. The highest percentage was found among AA and MA schools, with about 70% and 64%, respectively, of these institutions charging a general student technology fee. Of doctoral institutions, 58% charge such a fee, while about 39% of BA schools reported doing so

Not only does the percentage of schools charging a technology fee differ by Carnegie class, but so does the basis for charging the fee, as seen in Table 2-16. Charging a flat fee per semester was the most common method for all Carnegie classes except for AA institutions, for which charging a flat fee per credit hour was by far the most popular strategy. Overall, the practice of charging technology fees was consistent with the pattern found on the 2006 survey.

The total of dollars generated by student

Table 2-17
Total Dollars Generated per Campus from General Technology Fees (in 1,000s of Dollars) for Institutions That Charge Such Fees

	ALL*	DR	MA	BA	AA	OTHER
Mean	$1,425	$3,469	$1,372	$516	$628	$672
Median	$700	$2,120	$949	$300	$400	$428

* *N* = 525

Table 2-18
Separate Residence-Hall Network Connection Fee for All Respondents

	ALL	DR	MA	BA	AA	OTHER
Yes	13.1%	24.4%	13.3%	2.5%	2.3%	23.7%
No	66.0%	74.4%	81.5%	92.9%	17.2%	51.4%
No network connections	2.1%	0.6%	0.4%	0.0%	6.3%	4.6%
No residence halls	18.8%	0.6%	4.8%	4.6%	74.1%	20.2%

Table 2-19
Separate Residence-Hall Network Connection Fee for Institutions with Networked Residence Halls

	ALL*	DR	MA	BA	AA	OTHER
Yes	16.5%	24.7%	14.1%	2.7%	11.8%	31.5%
No	83.5%	75.3%	85.9%	97.3%	88.2%	68.5%

* *N* = 786

technology fees also differs significantly as a function of Carnegie class, as seen in Table 2-17, which shows the mean and median total dollars collected per campus from technology fees for those schools that charge a technology fee. Obviously, with more students on campus, larger schools (for example, doctoral institutions) would be expected to generate a larger amount of money from a general student technology fee. However, after controlling statistically for indicators of campus size (FTE students, headcount employees), 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 cannot be fully explained by differences in campus size. Comparing 2006 and 2007 data for institutions that completed both surveys and reported charging a general technology fee, a significant increase in total revenue generated was found for MA and AA institutions.

Another form of technology fee we examined has to do with whether a separate fee for residence-hall network connections is charged (see Table 2-18). Overall, charging such a fee is not a widespread practice, with only about 13% of ALL responding institutions reporting doing so. 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 (see Table 2-19) similarly revealed that the practice of charging a separate fee for residence-hall network connections is significantly related to Carnegie class. This practice is most common among institutions in the OTHER group and DR institutions and least common among BA schools. Overall, only 16.5% of ALL institutions that have networked residence halls reported charging a separate network connection fee.

Table 2-20
Percentage of Institutions Owning/Leasing
Various Numbers of Computers

Number of Computers	ALL	DR	MA	BA	AA	OTHER
Up to 500	9.3%	0.0%	3.3%	20.3%	8.0%	16.8%
501–1,000	19.3%	1.1%	17.8%	33.5%	34.5%	9.2%
1,001–2,000	26.2%	3.9%	33.3%	36.0%	36.8%	16.2%
2,001–3,000	11.7%	6.7%	21.1%	8.1%	11.5%	6.4%
3,001–5,000	10.7%	13.9%	14.4%	2.0%	5.7%	16.2%
5,001–10,000	13.4%	35.6%	9.3%	0.0%	2.9%	22.5%
More than 10,000	9.6%	38.9%	0.7%	0.0%	0.6%	12.7%

Table 2-21
Number of Campus-Owned/Leased Computers

	ALL	DR	MA	BA	AA	OTHER
Mean	4,430	12,774	2,469	1,117	1,627	5,403
Median	1,800	8,000	1,964	930	1,200	3,485

Table 2-22
Number of Campus-Owned/Leased Computers per FTE Student

	ALL	DR	MA	BA	AA	OTHER
Mean	0.90	0.74	0.45	0.61	0.44	2.61
Median	0.46	0.57	0.40	0.56	0.42	0.46

Equipment and Replacement Planning

In general, as the size and complexity of an institution increases, so does the number of campus-owned or campus-leased computers. As shown in Table 2-20, approximately 21% of the MA, just under 43% of the AA, and about 54% of the BA schools responding to our survey reported owning or leasing 1,000 or fewer computers. About 75% of doctoral schools reported owning or leasing more than 5,000 computers, with more than half of this group reporting owning or leasing more than 10,000 computers. An examination of the means and medians of total number of campus-owned or campus-leased computers similarly illustrates this pattern, as seen in Table 2-21. In looking at the data in the matched data set, we found a significant increase among ALL institutions, as well as for BA, AA, and MA schools, in the number of computers owned or leased by the institution.

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 comparisons, we calculated a ratio of the number of computers owned or leased by an institution per student FTE (see Table 2-22). This ratio also varies significantly across Carnegie classes. Compared with 2006, this year there was a significant increase in the number of campus owned/leased computers per FTE student for DR, BA, and AA institutions.

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 newer technologies and to reduce support costs. Therefore, the core data survey explores a variety of issues related to computer replacement.

Table 2-23
Percentage of Campuses Using Various
Computer Replacement Cycles in their Planning Efforts

Replacement Cycle	ALL	DR	MA	BA	AA	OTHER
None	9.8%	20.0%	10.4%	6.1%	2.9%	9.2%
< 3 years	0.6%	0.6%	1.5%	0.0%	0.0%	0.6%
3 years	11.9%	12.2%	12.6%	9.1%	6.3%	19.1%
3–4 years	27.1%	31.1%	27.4%	22.8%	24.7%	29.5%
4 years	22.4%	9.4%	17.8%	32.5%	34.5%	19.7%
> 4 years	6.2%	4.4%	7.0%	6.6%	9.8%	2.9%
Different cycles for different computers	22.0%	22.2%	23.3%	22.8%	21.8%	19.1%

Table 2-24
Percentage of Campuses with Replacement Funding in the Budget
for Various Percents of Computers

% Computers with Funding	ALL	DR	MA	BA	AA	OTHER
0%	8.5%	8.3%	9.6%	7.6%	5.7%	10.4%
Up to 19%	8.5%	19.4%	7.8%	2.5%	5.7%	7.5%
20–39%	17.9%	25.6%	18.1%	10.2%	17.2%	19.1%
40–59%	7.6%	11.7%	8.1%	7.6%	3.4%	6.9%
60–79%	13.6%	15.6%	13.7%	10.7%	14.9%	13.3%
80–100%	44.0%	19.4%	42.6%	61.4%	52.9%	42.8%

The planned replacement cycle for campus computers reported by respondents varies by Carnegie class, as seen in Table 2-23. More than 61% of all responding institutions endorse a replacement cycle of 3 years, 3–4 years, or 4 years. This percentage ranges from a low of nearly 53% (DR) to a high of nearly 66% for AA schools. However, the percentage of doctoral institutions (20%) that reported no planned replacement cycle is significantly greater than that for all other groups. Compared to last year's survey, there was a significant decrease among ALL respondents in the number of schools that have a 3-year replacement cycle.

It is one thing to have a plan for replacing computers and quite another to have the funds for this replacement embedded (that is, actually funded) in the budget. Table 2-24 shows the percentage of campuses with replacement funding in the budget for various percents of computers. Of ALL institutions, nearly 58% reported that at least 60% of their campus computers are on a funded replacement cycle, and this was at least the case for all Carnegie groups except for doctoral institutions, only 35% of which reported this level of funded computer replacement cycles. More than 61% of BA schools reported that 80–100% of their campus computers are on a funded replacement cycle, whereas only about 19% of doctoral schools reported that level.

An alternative presentation of these data is shown in Table 2-25, which provides the mean and median percentages of campus computers that have replacement funding in the budget. For those institutions in our matched data set, the estimated number and percentage of campus computers with replacement cycles funded in the budget increased significantly for ALL respondents as well as specifically for BA institutions from the 2006 to the 2007 survey.

Having a replacement plan and having the replacement funds actually budgeted tells

Table 2-25
Estimated Percentage of Campus Computers with Funded Replacement Cycles

	ALL	DR	MA	BA	AA	OTHER
Mean	59.8%	42.4%	59.0%	71.7%	67.4%	58.0%
Median	70.0%	30.0%	70.0%	90.0%	80.0%	65.0%

Table 2-26
Percentage of Campus Computers Replaced in Previous Fiscal Year

% Computers Replaced	ALL	DR	MA	BA	AA	OTHER
0%	1.1%	0.6%	2.2%	0.5%	1.6%	1.2%
Up to 5%	2.5%	1.7%	3.7%	2.0%	2.3%	2.3%
6–10%	7.7%	6.7%	7.0%	8.6%	8.0%	8.7%
11–15%	10.2%	8.3%	13.3%	9.6%	11.5%	6.4%
16–20%	19.6%	20.6%	16.7%	22.8%	23.0%	16.2%
21–25%	29.0%	36.1%	26.3%	27.4%	26.4%	30.1%
26–30%	14.7%	13.3%	15.6%	13.2%	12.6%	18.5%
31–35%	10.1%	10.6%	10.7%	10.2%	6.9%	11.6%
36–40%	2.5%	1.7%	2.2%	1.5%	4.6%	2.9%
More than 40%	2.6%	0.6%	2.2%	4.1%	4.0%	2.3%

Table 2-27
Comparison of Actual Computer Replacement to the Expressed Plan for Institutions with Replacement Plans

	ALL*	DR	MA	BA	AA	OTHER
On plan	64.5%	66.3%	63.7%	65.7%	60.3%	66.9%
Behind plan	25.8%	26.0%	26.8%	24.3%	26.7%	25.0%
Ahead of plan	9.7%	7.7%	9.5%	10.0%	13.0%	8.1%

** N = 678*

part of the story, but the rest of the story is told by looking at data about how many computers were actually replaced the previous fiscal year. These data are shown in Table 2-26. The results showed no significant change since last year's survey in the percentage of computers that were replaced in the previous fiscal year.

For those campuses that reported a plan for computer replacement, the data for the number of computers actually replaced were compared with the expressed plan. If the actual replacement numbers were within 5% of the plan, campuses were grouped into a category called "on plan." If they replaced more than this percentage, they were labeled "ahead of plan," and if they replaced less than this percentage, they were labeled "behind plan." These data are presented in Table 2-27. Although this methodology is not perfect, it does give one a sense that about 74% of campuses that have a plan are either on or ahead of that plan, despite economic hardships in higher education. There were no differences among the Carnegie groups for this variable.

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,

Table 2-28
Campuses with a Funding Model That Includes Renewal of the IT Capital Plant

	ALL	DR	MA	BA	AA	OTHER
Yes	53.4%	58.9%	46.7%	54.3%	46.0%	64.7%
No	46.6%	41.1%	53.3%	45.7%	54.0%	35.3%

Table 2-29
Percentage of Campuses Using External Suppliers to Run Various IT Functions

IT Function	ALL	DR	MA	BA	AA	OTHER
Administrative systems—transaction systems operation	17.5%	14.4%	22.2%	11.7%	19.5%	17.9%
Administrative systems—application development	11.3%	5.6%	11.5%	8.6%	15.5%	15.6%
Administrative systems—project management for implementations	8.4%	6.1%	8.5%	4.1%	11.5%	12.1%
All centralized IT staff and services	1.7%	0.6%	3.0%	0.0%	4.0%	0.6%
CIO/top IT administrator	1.9%	0.6%	2.2%	0.0%	5.2%	1.7%
Computer and network security	4.5%	3.3%	4.1%	3.0%	7.5%	5.2%
Computer operations	3.3%	1.7%	4.4%	0.5%	5.2%	4.6%
Data center	4.6%	2.8%	6.3%	2.0%	5.2%	6.4%
Desktop computer installation, maintenance, and/or repair services	10.3%	14.4%	7.4%	7.1%	5.2%	19.1%
Distance education	7.2%	3.9%	10.0%	3.6%	13.8%	4.0%
Help desk	7.0%	5.0%	5.9%	4.1%	13.2%	8.1%
Instructional/course management system	17.3%	12.8%	24.4%	8.1%	25.3%	13.3%
Multimedia services	2.6%	2.8%	3.3%	1.5%	3.4%	1.7%
Network services	4.7%	2.2%	5.2%	1.5%	8.0%	6.9%
Portal	4.4%	3.3%	5.9%	1.5%	8.0%	2.9%
Print services	10.3%	10.0%	13.3%	6.6%	6.9%	13.3%
Remote access to network services	4.6%	3.9%	5.9%	3.0%	4.0%	5.8%
Resnet (student residential networks)	5.1%	3.3%	8.5%	1.5%	2.9%	8.1%
Telephone services	17.3%	14.4%	17.8%	18.8%	17.2%	17.9%
User support services	2.9%	1.7%	4.8%	1.0%	4.0%	2.3%
Web development and/or hosting	17.6%	15.6%	19.3%	19.3%	12.6%	20.2%
Other IT service	15.0%	23.3%	13.7%	14.7%	9.8%	13.9%
No external suppliers	34.2%	33.9%	28.1%	43.1%	42.0%	26.0%

and so forth. More than 53% of ALL institutions reported that the current funding model of their campuses includes renewal of the capital plant, as seen in Table 2-28. The percentage of DR institutions reporting such funding was higher than that of the other Carnegie groups. There were no notable changes in results from last year's survey reporting a funding model that includes capital renewal.

Outsourcing and Service Level Agreements

The use of external suppliers to run a campus IT function appears not to be a common practice overall. More than 34% of ALL institu-

Table 2-30
Percentage of Campuses Using Written Service Level Agreements for Various IT Services

IT Service	ALL	DR	MA	BA	AA	OTHER
Academic/research support	12.2%	22.8%	12.2%	3.0%	7.5%	16.2%
Administrative systems support	23.4%	33.9%	23.3%	13.7%	22.4%	24.9%
Computer and network security	12.7%	18.3%	10.7%	7.1%	15.5%	13.3%
Data center services	21.3%	45.0%	20.4%	6.6%	13.2%	23.1%
Desktop/user support services	30.5%	50.6%	27.0%	14.7%	28.2%	35.3%
Instructional technology support	14.2%	22.2%	16.3%	5.6%	14.4%	12.1%
Multimedia services	8.8%	12.8%	10.0%	4.1%	10.9%	5.8%
Network services	21.5%	32.8%	20.7%	10.2%	20.7%	24.9%
Print services	11.1%	15.6%	8.5%	5.1%	13.2%	15.0%
Telephone services	20.1%	30.0%	21.9%	9.1%	17.2%	22.5%
Web support services	3.6%	3.9%	2.6%	1.0%	5.2%	6.4%
Training	12.4%	22.8%	11.5%	3.6%	9.2%	16.2%
Other IT services	6.4%	16.1%	7.0%	2.0%	1.1%	5.8%
No SLAs	53.2%	28.3%	53.7%	71.6%	64.4%	46.2%

tions reported that they do not outsource any functions or use application service providers (ASPs), as shown in Table 2-29. Overall, the percentage of ALL institutions in the matched data set that reported using external suppliers to run one or more IT functions increased over the past year, from about 62% to nearly 66%, with this increase following three previous years of increases, thus reflecting a clear trend in the use of outsourced services for at least one IT function.

The use of service level agreements (SLAs) was also analyzed, with results shown in Table 2-30. About 47% of ALL responding institutions reported some use of SLAs, with the percentage of institutions using no SLAs varying widely across Carnegie groups. The percentage of institutions using such agreements was significantly related to Carnegie class, with more BA and AA schools reporting no use of SLAs. Looking at the matched data set, the percentage of schools using no written SLAs did not change significantly from the 2006 survey.

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 in the United States. IPEDS collects institution-level data in such areas as enrollments, program completions, faculty, staff, and finances.
2. For more information, see the discussion on page vii of the introduction to this summary report about use of IPEDS data as well as the CDS announcement, "Caution Advised in Using IPEDS Data for Ratios," dated March 2, 2004, at http://net.educause.edu/apps/coredata/news/.

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 types of institutions varies, with significantly more help desk hours per week available at doctoral than other types of institutions and more at MA than BA or AA institutions.

While there is much discussion about the need for support on an around-the-clock basis, with support available 24 × 7, the CDS data tell us that this is not common practice, occurring at only about 7% of institutions that have help desks (with 5.5% of ALL institutions reporting that they do not have a help desk).

A second dimension of campus support has to do with the availability of e-mail, specifically whether 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 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 practice of providing all students an e-mail account is very com-

Table 3-1
Help Desk Availability

	ALL	DR	MA	BA	AA	OTHER
No help desk	5.5%	1.7%	0.7%	6.1%	15.5%	6.4%
Help desk with 24 × 7 support*	6.8%	17.2%	4.8%	3.6%	5.2%	4.6%
Mean hours/week help desk is available*	72.7	89.8	73.1	65.1	65.5	67.4

* *N* = 939

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

	ALL	DR	MA	BA	AA	OTHER
Yes	94.7%	98.9%	97.4%	98.5%	82.8%	93.6%
No	5.3%	1.1%	2.6%	1.5%	17.2%	6.4%

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

	ALL	DR	MA	BA	AA	OTHER
Never offered	3.6%	0.0%	1.9%	0.5%	13.2%	4.0%
Offered with no plans to discontinue	85.7%	78.3%	89.3%	93.4%	76.4%	88.4%
Offered but considering discontinuing	9.4%	20.0%	8.5%	5.6%	6.9%	6.4%
Already stopped offering	1.3%	1.7%	0.4%	0.5%	3.4%	1.2%

mon, reported by nearly 95% of ALL respondents, and fairly consistent for all Carnegie groups except for AA colleges, where the percentage of respondents reporting this practice was much lower than the others. 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 not necessarily long-term attendees of the institution. The one change in these patterns since last year's survey was a significant increase for ALL institutions, and most of this was attributable to a significant increase in AA schools.

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, to interpret the data in the previous table, and to identify patterns in the strategies used by different types of institutions.

Campus policies on providing universal student e-mail differ significantly across Carnegie classes, but overall nearly 86% of ALL respondents offer this access with no plans to discontinue it. However, there was an increase this year in the percentage of ALL institutions that were considering discontinuing this service, with this increase accounted for primarily within the DR category. Few DR, MA, or BA schools reported that universal student e-mail was never offered.

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 campuses with classrooms equipped with wired Internet connectivity differed significantly as a function of Carnegie class, with MA, BA, and AA institutions all reporting significantly higher percentages of classrooms equipped with wired Internet connectivity than 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 though in absolute terms they probably have far more classrooms with this capability than other types of institution, the percentage of such classrooms is smaller. And even though doctoral institutions reported a lower percentage of wired classrooms, this group has the highest mean percentage of classrooms with wireless connectivity (about 69%).

Table 3-4
Mean Percentage of Classrooms Equipped with Various Technologies

	ALL	DR	MA	BA	AA	OTHER
Wired Internet connectivity	90.8%	89.1%	93.5%	94.4%	92.6%	82.2%
Wireless Internet connectivity	65.3%	69.4%	66.5%	64.4%	61.0%	64.4%
LCD projectors	67.4%	66.3%	70.2%	66.2%	70.1%	62.9%
Computers	55.3%	46.9%	56.9%	57.6%	67.2%	47.1%
Televisions	27.8%	19.0%	29.9%	30.2%	36.1%	22.9%
Smart boards	7.7%	5.9%	7.2%	6.8%	11.5%	7.6%
Document projectors/systems/ cameras	28.5%	30.0%	29.6%	24.6%	34.4%	23.8%
Clickers (personal response systems)	6.4%	15.4%	5.3%	3.6%	4.0%	4.6%

Looking at the matched data set of schools that completed both the 2006 and 2007 surveys, we found that wired Internet connectivity increased significantly among ALL respondents. The mean percentage of classrooms equipped with wireless Internet connectivity increased about 8% for ALL schools in the matched data set, and the increase has been nearly 30% in the last three years.

The mean percentage of classrooms equipped with LCD projectors increased since last year for all institutional types. Overall, looking at the matched data set, there was a significant increase (about 5%) over last year's results, which has been the level of increase now for several consecutive years.

The mean percentage of classrooms equipped with computers was significantly lower on doctoral campuses as compared to other Carnegie groups, as was the percentage equipped with televisions. Looking at the matched data set, the mean percentage of classrooms equipped with computers also increased for several consecutive years, this year by about 4% for ALL institutions.

The mean percentage of classrooms equipped with individual response systems (clickers) for ALL respondents was 6.4%. DR institutions showed a higher mean percentage of classrooms equipped with clickers (about 15%) than all other groups, and we found about a 5% increase in number of classrooms equipped with clickers at DR schools since last year's survey.

Faculty Support

If e-learning is going to become a reality in higher education, the extent of support provided 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.

All types of support reported for faculty use of technology in teaching and learning differed significantly by Carnegie class. As was the case last year, for the most part doctoral institutions reported greater use of these approaches than other Carnegie groups. Offering faculty training upon request and offering faculty training through scheduled seminars were the two most common methods of assisting faculty reported on this year's survey, with about 95% and 88% respectively of ALL campuses using these two strategies.

In comparing institutions in our matched data set for the ten methodologies, there was a statistically significant increase in the aggregate (ALL) level for several of the ways in which faculty are supported in the use of technology in teaching and learning, with increases in student technology assistants who help faculty use technology; intensive support for faculty using technology; activities for faculty to share innovative ideas; and special grants/ awards for faculty using technology.

Table 3-5
How Faculty Are Supported in the Use of Technology in Teaching and Learning

	ALL	DR	MA	BA	AA	OTHER
Designated instructional technology center	67.9%	82.2%	75.2%	52.8%	63.2%	67.9%
Faculty teaching/excellence center that works with IT	55.0%	72.2%	62.6%	32.0%	54.0%	52.6%
Instructional designers who work with technologists	57.9%	80.0%	60.7%	33.5%	54.0%	62.4%
Instructional technologists who are discipline specialists	25.3%	36.7%	24.4%	19.3%	16.7%	30.1%
Student technology assistants who help faculty use technology	39.3%	60.6%	45.2%	44.7%	16.7%	24.9%
Intensive support for faculty using technology	57.4%	68.9%	62.6%	53.3%	50.6%	49.1%
Faculty training through scheduled seminars	88.0%	93.9%	91.1%	82.7%	92.0%	79.2%
Faculty training on request	94.8%	97.2%	98.1%	94.4%	94.3%	87.9%
Activities for faculty to share innovative ideas	74.2%	88.3%	78.1%	69.5%	71.8%	61.3%
Special grants/awards for faculty using technology	46.1%	60.6%	48.5%	38.6%	43.7%	38.2%

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

	ALL	DR	MA	BA	AA	OTHER
Mean	65.1%	85.4%	72.3%	85.0%	20.5%	55.0%
Median	80.0%	93.5%	85.0%	94.0%	10.0%	60.0%
Minimum	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
Maximum	100.0%	100.0%	100.0%	100.0%	99.0%	100.0%

Student Computing

The estimated percentage of students using their own computers on campus differed significantly as a function of Carnegie class, as shown in Table 3-6. Doctoral and baccalaureate institutions had a higher percentage than the other groups, while AA schools reported a much lower percentage than all other groups.

While some of the differences in student computer ownership can probably be attributed to 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 versus private institutions—a very strong and statistically significant pattern has emerged each year. As seen in Table 3-7, at private institutions, there is approximately a 33% greater level of student ownership than at public institutions for ALL respondents. 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 compared to a student who is commuting from home to the nearby public institution. This finding, along with an assumption that a

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

	ALL	DR	MA	BA	AA	OTHER
Private institutions	85.8%	94.5%	82.6%	89.9%	55.8%	68.7%
Public institutions	52.8%	80.9%	63.9%	61.8%	20.0%	51.0%

Table 3-8
Policies on Student Computer Requirements

	ALL	DR	MA	BA	AA	OTHER
All students are provided a PC	2.6%	1.1%	3.0%	5.1%	0.0%	3.5%
Students in general required to buy/ lease PCs	4.2%	8.9%	2.6%	2.5%	0.6%	7.5%
Students in some departments required to buy/lease PCs	15.0%	38.9%	11.5%	3.0%	6.3%	17.9%
PC buy/lease recommended but not required for all students	32.0%	31.1%	40.7%	54.8%	4.0%	21.4%
PC buy/lease recommended but not required in some departments	8.1%	8.3%	10.4%	3.6%	6.3%	11.6%
No requirements or recommendations about PCs	35.8%	10.0%	27.8%	28.9%	81.6%	37.0%
Other	2.2%	1.7%	4.1%	2.0%	1.1%	1.2%

digital divide still persists on any campus, be it private or public, supports the premise that public access to computers needs to continue to be offered or some students will be disadvantaged 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. Only about 10% of doctoral institutions do not have any requirements or recommendations about personal computers, whereas about 82% of AA colleges do not have such guidelines; intermediate percentages were observed among MA, BA, and OTHER institutions. Nearly 39% of doctoral institutions have policies requiring students in some departments to buy or lease a PC. The percentage of schools recommending PC buying or leasing for all students, but not requiring it, was highest for BA colleges, with nearly 55% of these schools reporting such a policy. More than 40% of MA colleges and 31% of doctoral schools reported this policy, which was virtually nonexistent among AA colleges (4%). The practice of a campus providing all students with a personal computer is overall uncommon; it is rare at doctoral and MA institutions and nonexistent at the AA colleges that responded to our survey. All students are provided a PC at about 5% of BA colleges and 3.5% of OTHER schools responding to our survey.

Another dimension of student computing addressed by the CDS survey was the level of support provided in the residence halls that house undergraduate students. As seen in Tables 3-9 and 3-10, more than 95% of BA, MA, and DR institutions reported providing high-speed network access in the residence halls, while only about 71% of OTHER schools did so. Note, however, that about 20% of respondents in this category reported not having residence halls. Only about 17% of AA colleges reported offering this access, but this

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

	ALL	DR	MA	BA	AA	OTHER
Yes	77.9%	98.9%	94.8%	95.4%	16.7%	71.1%
No	1.7%	0.0%	0.4%	0.0%	3.4%	5.8%
No residence halls	20.4%	1.1%	4.8%	4.6%	79.9%	23.1%

Table 3-10
High-Speed Network Connections Offered in Residence Halls for Institutions with Residence Halls

	ALL*	DR	MA	BA	AA	OTHER
Yes	97.9%	100.0%	99.6%	100.0%	82.9%	92.5%
No	2.1%	0.0%	0.4%	0.0%	17.1%	7.5%

* *N* = 791

Table 3-11
Primary Technology of Network Connections for Institutions Offering High-Speed Connectivity in Residence Halls

	ALL*	DR	MA	BA	AA	OTHER
Ethernet	85.0%	87.6%	86.7%	86.7%	62.1%	80.5%
Cable modem	2.2%	1.1%	2.3%	1.6%	10.3%	2.4%
DSL	1.3%	1.7%	0.0%	0.5%	6.9%	3.3%
Wireless	11.0%	8.4%	10.5%	10.6%	20.7%	13.8%
Other	0.5%	1.1%	0.4%	0.5%	0.0%	0.0%

* *N* = 774

Table 3-12
Speed of Residence-Hall Network Connections for Institutions Offering High-Speed Connectivity in Residence Halls

	ALL*	DR	MA	BA	AA	OTHER
10 Mbps	12.5%	14.6%	11.3%	9.6%	10.3%	17.1%
10–11 Mbps	2.2%	1.7%	3.5%	0.5%	6.9%	1.6%
10/100 Mbps	41.3%	44.9%	41.0%	44.1%	41.4%	32.5%
100 Mbps	37.6%	32.0%	40.2%	39.9%	31.0%	38.2%
> 100 Mbps	6.3%	6.7%	3.9%	5.9%	10.3%	10.6%

* *N* = 774

number is also distorted because about 80% of the schools in this group reported not having residence halls. Nearly all schools offering high-speed network connectivity in residence halls, regardless of Carnegie class, use primarily Ethernet connections, and the speeds of connectivity reported are also consistent across school type, as seen in Tables 3-11 and 3-12. Since last year, there has been a significant increase in wireless network connectivity and a trend toward faster connectivity speeds.

In response to illegal file sharing and the undue attention that higher education has received in this regard, some institutions have

Table 3-13
Campus-Negotiated Service to Offer Access to Online Music and Movies

	ALL	DR	MA	BA	AA	OTHER
Already offered	15.4%	39.4%	19.3%	12.7%	0.0%	2.9%
Plan to offer	2.4%	3.3%	3.3%	1.5%	1.7%	1.7%
Considering	14.5%	15.0%	20.0%	14.7%	10.3%	9.2%
No plans	67.7%	42.2%	57.4%	71.1%	87.9%	86.1%

Table 3-14
Course Management System Practices

	ALL	DR	MA	BA	AA	OTHER
Not deployed and no plans to deploy	0.5%	0.0%	0.4%	0.5%	1.1%	0.6%
Planning to deploy one CMS or more	0.7%	0.0%	0.0%	1.5%	0.6%	1.7%
Currently reviewing options	4.5%	5.6%	1.5%	6.6%	4.6%	5.8%
Support a single commercial CMS	67.2%	62.8%	78.5%	56.9%	78.7%	54.7%
Support more than one commercial CMS	6.4%	6.1%	7.4%	3.6%	6.3%	8.7%
Support a single homegrown CMS	1.2%	0.6%	1.1%	0.5%	0.6%	3.5%
Support more than one homegrown CMS	0.2%	0.6%	0.0%	0.0%	0.0%	0.6%
Support a single open source CMS	8.5%	5.0%	5.2%	20.8%	2.3%	9.2%
Support more than one open source CMS	0.5%	0.0%	0.4%	1.0%	0.6%	0.6%
Employ hybrid approach (commercial, homegrown, and/or open source)	9.0%	19.4%	4.8%	7.1%	2.3%	13.3%
Other	1.2%	0.0%	0.7%	1.5%	2.3%	1.7%

begun to offer students a campus-negotiated service to provide online music and movies. For four years now, the CDS survey has included a question about this practice. Overall, more than 15% of respondents currently offer such a service. As shown in Table 3-13, 32% of ALL campuses currently offer, plan to offer, or are considering this option. However, it is worth noting that a significantly greater percentage of doctoral institutions (which are often the largest campuses) are pursuing such a strategy, with more than 39% of these schools already offering such a service, and this number is significantly greater than last year (up 11%), as is also the case with BA institutions (up 7%).

Course Management Systems

A final discussion about student and faculty computing relates to the use of a course management system (CMS). The analysis here focuses on use and patterns of deployment, while section five of this summary report (see p. 47) addresses the actual systems in use.

As illustrated in Table 3-14, 93% of ALL responding campuses reported currently supporting at least one CMS. Only 0.5% of ALL respondents have not deployed such a system and do not have plans to do so. More than 67% of ALL responding campuses currently support a single commercial CMS, with 8.5% supporting a single open source CMS. About

Table 3-15
Faculty Use of a Currently Deployed Course Management System

	ALL*	DR	MA	BA	AA	OTHER
Ubiquitous, employed for nearly all courses	35.1%	32.4%	33.7%	32.4%	31.9%	46.5%
Faculty use selectively	64.9%	67.6%	66.3%	67.6%	68.4%	53.5%

* $N = 930$

6% reported supporting more than one commercial system. More doctoral than other types of institution reported using a hybrid approach (some combination of homegrown, commercial, and/or open source systems). Looking at the matched data set, more schools are using an open source solution than reported on last year's survey. This is true for ALL institutions, with significant increases in this practice for DR and BA institutions.

Finally, we examined the nature and extent of faculty use of course management systems, as shown in Table 3-15. At the vast majority of campuses, faculty members use these systems selectively, with about 35% of the campuses that support such systems reporting that they are employed for all or nearly all courses. This represents a 4% increase in ubiquitous use since last year's survey among institutions in the matched data set.

FOUR

Networking, Advanced Technologies, and IT 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. Doctoral schools have significantly more total bandwidth than MA, BA, and AA colleges, and master's institutions reported significantly more total bandwidth than AA and BA schools. The mean total bandwidth available to the commodity Internet from campus increased significantly among ALL institutions in the matched data set from the 2006 to the 2007 survey. Increases were also found within all Carnegie groups, with doctoral institutions up 60%, MA institutions up 32%, BA institutions up 51%, and AA institutions up 28%.

Looking at access to high-performance networks from campuses, Table 4-2 shows that total bandwidth available is also related to Carnegie group. 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 56% of the MA, 69% of the BA, and 67% of the AA colleges responding to our survey provide no access whatsoever to such networks.

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

Bandwidth	ALL	DR	MA	BA	AA	OTHER
0 Mbps	0.6%	0.0%	0.7%	0.0%	0.0%	1.2%
More than 0–4.5 Mbps	3.7%	0.6%	2.6%	3.0%	6.3%	6.9%
4.6–12 Mbps	8.2%	0.6%	3.7%	10.7%	20.1%	8.1%
12.1–44 Mbps	20.6%	0.6%	22.3%	30.5%	34.5%	13.9%
45–89 Mbps	20.6%	7.8%	26.0%	34.0%	21.8%	9.2%
90–154 Mbps	19.0%	17.8%	25.3%	18.3%	9.8%	20.8%
155–299 Mbps	7.4%	21.7%	5.9%	1.5%	1.7%	6.9%
300–999 Mbps	7.8%	25.0%	3.3%	0.5%	1.7%	11.0%
1,000 Mbps or more	12.1%	26.1%	10.0%	1.5%	2.9%	22.0%

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

Bandwidth	ALL	DR	MA	BA	AA	OTHER
0 Mbps	48.3%	8.3%	55.6%	69.0%	66.7%	36.4%
More than 0–4.5 Mbps	2.1%	0.0%	1.9%	3.6%	2.9%	2.3%
4.6–12 Mbps	3.6%	1.1%	5.9%	5.1%	1.7%	2.9%
12.1–44 Mbps	6.5%	3.3%	7.4%	5.6%	11.5%	4.6%
45–89 Mbps	8.0%	8.9%	7.8%	8.6%	9.2%	5.8%
90–154 Mbps	5.5%	7.2%	8.9%	2.0%	4.6%	3.5%
155–299 Mbps	3.6%	13.3%	2.2%	0.5%	0.6%	2.3%
300–999 Mbps	2.8%	7.8%	2.2%	0.0%	0.6%	4.0%
1,000 Mbps or more	19.4%	50.0%	8.1%	5.6%	2.3%	38.2%

Table 4-3
Bandwidth Tracking and Shaping

Practice	ALL	DR	MA	BA	AA	OTHER
Track bandwidth utilization	74.8%	79.4%	75.8%	71.1%	74.7%	72.8%
Shape by time of day	26.5%	30.6%	31.9%	39.1%	9.8%	16.2%
Shape by location on campus	51.5%	71.1%	64.1%	60.4%	17.8%	35.3%
Shape by type of traffic	71.7%	67.2%	82.8%	88.8%	50.6%	61.8%
Shape by direction	51.2%	58.9%	62.2%	68.0%	27.0%	31.2%
Do not track or shape	6.0%	2.2%	3.3%	2.5%	13.8%	10.4%

From the 2006 to the 2007 survey, the total bandwidth available to high-performance networks increased significantly among ALL institutions in the matched data set to nearly 874 Mbps. The only significant increase since last year was for DR institutions.

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.

As seen in Table 4-3, 6% of ALL campuses report not tracking or shaping bandwidth at all, but this percentage is elevated by the high percentage of AA colleges (nearly 14%) reporting no such practices. The dominant strategy of AA colleges appears to be tracking by utilization, with this group reporting much less use of shaping strategies than the other Carnegie groups. The most popular shaping strategy overall is shaping by the type of network traffic, with AA institutions nonetheless using this strategy far less than doctoral, MA, and BA institutions. Only about 10% of AA institutions reported shaping by time of day compared to more than 39% of BA colleges, and only 27% of AA schools reported shaping by direction compared to about 59–68% for doctoral, MA, and BA schools. More than 71% of doctoral institutions reported shaping by location, the highest percentage of all groups for this type of shaping. In looking at the matched data set, there was an increase overall in the past year in the percentage of schools that track bandwidth utilization (from about 72% to over 76%), with this increase attributable to MA and DR institutions.

Remote and Wireless Access

Providing remote access to the Internet and to campus networks is critical to serving fac-

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

	ALL	DR	MA	BA	AA	OTHER
Faculty	32.6%	51.1%	28.9%	35.0%	14.4%	34.7%
Students	22.8%	45.6%	20.0%	22.8%	4.0%	22.5%
Staff	35.1%	50.6%	30.4%	35.0%	23.0%	38.7%
Alumni	4.7%	8.9%	4.4%	3.6%	1.7%	5.2%
Not provided	63.0%	48.3%	68.1%	63.5%	75.3%	57.2%

Table 4-5
Percentage of Institutions Providing Remote Access to Faculty in Various Ways

	ALL	DR	MA	BA	AA	OTHER
Modem pool	32.6%	51.1%	28.9%	35.0%	14.4%	34.7%
Outsourced modem pool	3.4%	3.3%	3.3%	2.0%	1.7%	6.9%
Institutionally arranged discount with ISP	10.0%	17.2%	7.8%	4.6%	4.0%	14.5%
Subsidized ISP accounts	5.6%	6.1%	4.8%	6.1%	2.3%	9.2%
State academic network	25.5%	32.8%	29.6%	12.2%	23.0%	28.9%
Regional academic network	18.1%	30.6%	13.3%	6.1%	12.6%	31.8%
Virtual private network (VPN)	66.7%	85.0%	66.7%	62.9%	45.4%	73.4%

ulty and students who live off campus. The survey asked about a number of commonly used methods of providing such access to four constituencies: faculty, students, staff, and alumni. Internal modem pool access is differentially employed for various constituencies, as shown in Table 4-4, with the greatest access provided to faculty and staff and considerably less to students. Only 4.7% of ALL respondents make such access available to alumni. The percentage of institutions reporting that remote access is provided via an internal modem pool decreased significantly from the 2006 to the 2007 survey for faculty, students, and staff, and there was a significant increase in the number of institutions that reported providing no remote access via internal modem pool. This is the fifth year in a row with such decreases in use of an internal modem pool, suggesting that this type of remote access is being phased out.

Table 4-5 shows the percentage of schools providing remote access to faculty in various ways. Two thirds of ALL institutions reported providing remote access to faculty via virtual private networks (VPNs), a significant increase since the 2006 survey. Ten percent are providing access via ISPs under an institutionally arranged discount, with 5.6% offering subsidized ISP accounts.

The growth of wireless network access on campuses is striking. The 2007 core data survey captured detailed data (far too great to include in this summary report) about the extent of penetration of wireless into eight specified areas of the campus: classrooms, libraries, open spaces, research facilities, administrative buildings, public laboratories, student unions, and residence halls. In general, there is wide variation in the level of deployment of wireless across these categories and across Carnegie groups. Overall, the highest level of penetration is found in libraries, with nearly 85% of ALL respondents reporting that 76–100% of their libraries provide wireless access. Wireless access is least available in residence halls, open spaces, and administrative buildings.

Table 4-6
Number of Campus Sites from Which Interactive Videoconferencing Can Be Initiated

Number of Sites	ALL	DR	MA	BA	AA	OTHER
0	15.6%	1.7%	13.3%	34.5%	10.9%	16.8%
1	16.4%	1.1%	17.8%	35.0%	14.9%	10.4%
2	12.3%	5.6%	14.8%	12.7%	16.1%	11.0%
3	10.0%	5.0%	11.9%	5.6%	14.9%	12.1%
4–5	11.9%	10.0%	12.2%	4.6%	20.1%	13.3%
6–10	18.3%	29.4%	23.0%	5.1%	14.9%	17.9%
11–20	7.4%	17.2%	4.1%	2.5%	5.2%	10.4%
More than 20	8.1%	30.0%	3.0%	0.0%	2.9%	8.1%

Table 4-7
Percentage of Campus Desktops That Can Deploy Desktop Videoconferencing

% of Desktops	ALL	DR	MA	BA	AA	OTHER
0%	22.2%	3.9%	23.3%	27.9%	32.2%	23.1%
Up to 19%	46.6%	52.2%	45.9%	42.1%	46.6%	46.8%
20–39%	9.4%	12.2%	8.9%	10.2%	6.9%	8.7%
40–59%	6.3%	10.0%	4.8%	7.1%	5.2%	5.2%
60–79%	3.8%	6.7%	4.4%	2.5%	1.7%	3.5%
80–100%	11.7%	15.0%	12.6%	10.2%	7.5%	12.7%

Videoconferencing Capabilities

Videoconferencing capabilities were reported by all campus types, but about 16% of ALL responding campuses do not have any sites (excluding desktop videoconferencing) from which interactive conferences can be initiated, with that case being most common for BA institutions (about 35%). In addition, the level of penetration varied immensely by Carnegie class, as seen in Table 4-6. More doctoral institutions reported availability of these facilities, with 30% of respondents in this category having more than 20 such sites. Since last year there was a significant increase in the number of such sites for ALL respondents, with this increase being significant only at doctoral institutions.

In addition to central sites for videoconferencing, respondents were asked about the percentage 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. As seen in Table 4-7, about 28% of BA and 32% of AA schools reported not having a single machine with such capability. Since last year there was a significant decrease in desktop videoconferencing capability for ALL schools, as well as for all of the major Carnegie groups except doctoral institutions; this decrease is a change in direction from previous years.

Deployment of New Technologies

This year's core data survey explored the level of deployment of 17 technologies that are currently being addressed within the higher education IT community. Data for these technologies are presented in Tables 4-8 through 4-24.

As shown in Table 4-8, voice-over-IP (VoIP) technology is being fully deployed at more than 43% of ALL responding campuses, a significant increase since last year. There was also a significant increase in the deployment of VoIP since last year for all Carnegie groups.

Video-over-IP technology is employed to a higher extent than VoIP, as shown in Table 4-9. Of ALL campuses, nearly 50% reported hav-

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

	ALL	DR	MA	BA	AA	OTHER
Deployed	43.3%	47.2%	40.0%	32.0%	53.4%	46.8%
Piloting	15.5%	25.0%	14.8%	12.2%	7.5%	18.5%
In progress	9.4%	7.8%	8.1%	9.6%	11.5%	20.4%
Considering	24.1%	16.7%	28.5%	30.5%	22.4%	19.7%
Not planned	7.7%	3.3%	8.5%	15.7%	5.2%	4.6%

Table 4-9
Status of Video-over-IP Technology

	ALL	DR	MA	BA	AA	OTHER
Deployed	49.5%	66.7%	53.3%	28.4%	52.3%	46.8%
Piloting	10.5%	11.7%	11.5%	8.1%	8.6%	12.1%
In progress	7.6%	6.1%	5.9%	7.6%	8.0%	11.6%
Considering	21.9%	11.7%	22.6%	31.0%	23.0%	20.2%
Not planned	10.5%	3.9%	6.7%	24.9%	8.0%	9.2%

Table 4-10
Status of PKI Technology

	ALL	DR	MA	BA	AA	OTHER
Deployed	18.8%	18.9%	15.9%	20.3%	23.0%	17.3%
Piloting	4.9%	6.7%	3.7%	4.1%	2.3%	8.7%
In progress	8.5%	10.6%	8.1%	7.1%	7.5%	9.2%
Considering	31.9%	45.0%	36.3%	20.8%	19.5%	36.4%
Not planned	35.9%	18.9%	35.9%	47.7%	47.7%	28.3%

ing deployed this technology, with the highest use by doctoral institutions and lowest use at BA institutions. The deployment of video-over-IP technology increased since last year for ALL respondents in the matched data set. Although there was an increase in use of this technology in all groups, the increase was significant only among DR and MA institutions.

The use of public key infrastructure (PKI) is interesting to note, as this technology may be critical in the deployment of campus security policies and practices. As seen in Table 4-10, deployment of PKI is still in the early stages, despite the amount of campus discussion and numbers of conference presentations on this topic. There was a significant increase in deployment of PKI since last year for ALL institutions, and a significant decrease for ALL schools in the number of campuses not planning to use this technology.

Doctoral institutions use enterprise directory technology more than the other types of institution, but more than 67% of ALL responding institutions reported having deployed this technology. Such a directory is essential for authentication and authorization efforts. As shown in Table 4-11, the vast majority of respondents in all groups have already deployed it, are in the process of piloting or implementing it, or are considering it. Looking at the schools in the matched data set for the 2006 and 2007 surveys, there was a significant increase in the deployment of enterprise directories by ALL institutions, as well as for MA and BA institutions.

Table 4-11
Status of Enterprise Directory Technology

	ALL	DR	MA	BA	AA	OTHER
Deployed	67.4%	82.8%	67.4%	66.5%	54.0%	65.9%
Piloting	2.0%	1.7%	2.6%	2.5%	0.6%	2.3%
In progress	13.7%	12.2%	13.7%	12.2%	16.1%	14.5%
Considering	11.1%	2.2%	11.5%	9.6%	20.7%	11.6%
Not planned	5.8%	1.1%	4.8%	9.1%	8.6%	5.8%

Table 4-12
Status of Biometric Technology

	ALL	DR	MA	BA	AA	OTHER
Deployed	6.4%	12.8%	6.3%	3.6%	2.9%	6.9%
Piloting	5.7%	8.9%	6.7%	3.0%	2.9%	6.9%
In progress	2.6%	3.9%	2.6%	1.5%	2.3%	2.9%
Considering	23.4%	25.6%	23.2%	18.8.%	20.1%	30.1%
Not planned	61.8%	48.9%	61.1%	73.1%	71.8%	53.2%

Table 4-13
Status of Smart Card Technology

	ALL	DR	MA	BA	AA	OTHER
Deployed	16.6%	23.9%	15.2%	18.3%	6.3%	19.7%
Piloting	2.7%	5.6%	1.5%	0.0%	1.1%	6.4%
In progress	5.5%	5.6%	5.2%	5.6%	8.6%	2.9%
Considering	34.4%	32.2%	36.7%	31.0%	33.9%	37.6%
Not planned	40.7%	32.8%	41.5%	45.2%	50.0%	33.5%

There is still very little deployment of biometric technology on campuses, which includes use of fingerprints, retinal scans, or other physiological means of user identification for security purposes. Of ALL responding campuses, nearly 62% are not even planning for this technology (see Table 4-12), although there was a significant increase for ALL schools in the use of biometric technology since the 2006 survey.

As shown in Table 4-13, the deployment of smart cards was reported most by doctoral institutions and least by AA institutions. Only 16.6% of ALL responding institutions reported deployment of smart card technology, and almost 41% reported that this technology is not planned. There were no significant differences since last year in these percentages.

Web services technology refers to a set of tools and building blocks for system development. As shown in Table 4-14, this technology is relatively advanced at a large percentage of institutions overall and within each Carnegie class. Eighty percent of doctoral institutions have deployed web services technology, and another nearly 11% are piloting it or have it in progress. Among MA, BA, and AA colleges, the range of deployment of this technology is about 58–63%, and about another 12% of schools in these groups are piloting this technology or have it in progress. There was a significant increase in the deployment of this technology for ALL respondents in the matched data set comparing the 2006 and 2007 survey results.

Table 4-14
Status of Web Services Technology

	ALL	DR	MA	BA	AA	OTHER
Deployed	65.2%	80.0%	63.3%	57.9%	60.3%	65.9%
Piloting	5.4%	4.4%	4.8%	4.1%	4.6%	9.8%
In progress	7.6%	6.7%	7.8%	8.1%	7.5%	8.1%
Considering	12.9%	8.3%	14.1%	15.7%	13.8%	11.6%
Not planned	8.9%	0.6%	10.0%	14.2%	13.8%	4.6%

Table 4-15
Status of Antivirus Software

	ALL	DR	MA	BA	AA	OTHER
Deployed	99.7%	100.0%	99.6%	99.5%	99.4%	100.0%
Piloting	0.2%	0.0%	0.4%	0.5%	0.0%	0.0%
In progress	0.1%	0.0%	0.0%	0.0%	0.6%	0.0%
Considering	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Not planned	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4-16
Status of Electronic Signatures

	ALL	DR	MA	BA	AA	OTHER
Deployed	9.7%	16.1%	8.1%	7.1%	9.2%	8.7%
Piloting	6.0%	12.8%	7.4%	2.5%	1.7%	5.2%
In progress	10.1%	11.1%	11.1%	8.6%	7.5%	11.6%
Considering	42.3%	39.4%	46.3%	37.1%	41.4%	45.7%
Not planned	32.0%	20.6%	27.0%	44.7%	40.2%	28.9%

While the status of the various technologies discussed thus far has differed considerably across Carnegie groups, nearly 100% of ALL responding institutions reported having already deployed antivirus software. Table 4-15 shows the remarkable consistency and high level of deployment of this technology across all types of institutions.

Like biometrics, electronic signature technology is not particularly common in higher education institutions across all groups, as shown in Table 4-16. Again, the percentage of campuses at which such technology has been deployed, is in the pilot stage, or is otherwise in progress is greatest for doctoral institutions, at 40%, followed by approximately 26% of MA and OTHER colleges. This technology is not planned at 32% of ALL institutions; however, the percentage of schools considering using electronic signatures is greater than the percentage not planning for this technology at all types of institutions except BA colleges. There were no significant changes in any stages of adoption of this technology since last year.

Table 4-17 shows the status of wireless security technologies to be particularly advanced at doctoral institutions, with over 80% reporting having deployed this technology and less than 1% reporting no plans for implementation. The range of deployment for the rest of the groups is from about 65% to nearly 78%. There was a significant leap in deployment of this technology since last year's survey, with an approximately 6% increase in

Table 4-17
Status of Wireless Security Technologies

	ALL	DR	MA	BA	AA	OTHER
Deployed	74.1%	80.6%	78.1%	69.5%	64.9%	75.7%
Piloting	5.8%	7.2%	4.4%	6.6%	4.6%	6.9%
In progress	11.6%	6.7%	11.1%	13.7%	17.2%	9.2%
Considering	7.3%	5.0%	5.2%	10.2%	12.1%	5.2%
Not planned	1.1%	0.6%	1.1%	0.0%	1.1%	2.9%

Table 4-18
Status of Emergency Notification System Technologies

	ALL	DR	MA	BA	AA	OTHER
Deployed	49.2%	69.4%	60.4%	58.2%	28.7%	21.4%
Piloting	7.2%	7.2%	5.9%	6.1%	9.8%	7.5%
In progress	20.2%	13.3%	18.9%	18.9%	31.0%	20.2%
Considering	19.5%	10.0%	13.7%	14.3%	26.4%	37.6%
Not planned	3.8%	0.0%	1.1%	2.6%	4.0%	13.3%

Table 4-19
Status of Antispam Tools

	ALL	DR	MA	BA	AA	OTHER
Deployed	98.5%	99.4%	98.5%	99.5%	96.6%	98.3%
Piloting	0.1%	0.0%	0.0%	0.0%	0.0%	0.6%
In progress	0.3%	0.6%	0.4%	0.0%	0.6%	0.0%
Considering	0.4%	0.0%	0.0%	0.5%	0.6%	1.2%
Not planned	0.7%	0.0%	1.1%	0.0%	2.3%	0.0%

deployment overall and about a 40% increase over the past four years.

A new technology was introduced to the Core Data Service this last year due to the tragedies at Virginia Tech and other campuses, namely emergency notification system technologies. Nearly half of all campuses have already deployed these technologies, with the deployment being greater at more complex institutions. Such systems were not planned at only 3.8% of ALL campuses, and not a single doctoral institution indicated not planning to use such technologies, as shown in Table 4-18.

The spam plague from which all of our campuses have suffered has resulted in almost universal adoption of antispam tools, with 98.5% of ALL respondents having deployed this technology and fewer than 1% of ALL respondents not planning to do so, as shown in Table 4-19. There were no notable differences across the Carnegie groups in adoption of this technology.

Table 4-20 indicates that nearly 80% of ALL campuses have deployed antispyware software, with only 2.2% not planning to do so. The only difference found was that BA institutions had deployed this software more than schools in the other Carnegie groups, with a significantly higher rate of deployment than DR and OTHER institutions. Clearly this is a technology that has been readily embraced in a very short period of time. Comparing the results of the 2006 and 2007 surveys for the matched data set,

Table 4-20
Status of Antispyware Software

	ALL	DR	MA	BA	AA	OTHER
Deployed	79.1%	76.1%	81.1%	83.8%	79.3%	73.4%
Piloting	4.3%	5.0%	4.8%	2.0%	4.0%	5.8%
In progress	6.0%	6.7%	4.8%	6.6%	5.7%	6.9%
Considering	8.4%	10.6%	7.0%	6.1%	7.5%	11.6%
Not planned	2.2%	1.7%	2.2%	1.5%	3.4%	2.3%

Table 4-21
Status of IPTV

	ALL	DR	MA	BA	AA	OTHER
Deployed	9.7%	13.3%	10.7%	3.0%	12.1%	9.2%
Piloting	5.4%	8.9%	6.7%	1.5%	2.9%	6.9%
In progress	4.2%	7.8%	5.2%	2.0%	3.4%	2.3%
Considering	27.7%	36.7%	29.3%	26.4%	20.1%	24.9%
Not planned	53.0%	33.3%	48.1%	67.0%	61.5%	56.6%

Table 4-22
Status of Personal Firewall Software

	ALL	DR	MA	BA	AA	OTHER
Deployed	53.7%	63.3%	53.2%	53.8%	49.4%	48.6%
Piloting	2.6%	2.2%	2.2%	2.0%	1.1%	5.8%
In progress	5.5%	7.2%	5.2%	3.0%	4.0%	8.7%
Considering	11.7%	13.3%	13.7%	8.6%	12.6%	9.2%
Not planned	26.5%	13.9%	25.6%	32.5%	32.8%	27.7%

there was a significant increase in the deployment of this technology for ALL respondents, as well as across all groups.

As seen in Table 4-21, Internet Protocol television is in the early stages of adoption with only about 10% of ALL campuses having deployed IPTV and 53% having no plans to do so. It should be noted, however, that there is a significantly different pattern within the Carnegie groups, as doctoral institutions reported a greater level of piloting or considering this technology compared to other groups, with a significantly lower percentage of DR institutions not planning to implement IPTV. There was a significant increase in the use of this technology for ALL schools since the 2006 survey.

As with other measures related to security, the use of personal firewall software appears to have been readily embraced. As shown in Table 4-22, nearly 54% of ALL campuses have deployed this technology. Again, with this technology there is a more active pattern of adoption in doctoral institutions, with fewer of these campuses reporting that it is not planned. Since the 2006 survey, there was a significant increase (4%) in the deployment of personal firewall software for ALL institutions.

As shown in Table 4-23, only about 7% of ALL campuses have deployed token technology, with about 5% of campuses indicating that they have no plans to do so. However, a significantly greater percentage of DR institutions than schools in other Carnegie groups have

Table 4-23
Status of Token Technology

	ALL	DR	MA	BA	AA	OTHER
Deployed	7.2%	19.4%	5.2%	3.0%	2.3%	6.9%
Piloting	2.1%	3.3%	1.9%	1.5%	0.6%	3.5%
In progress	1.5%	4.4%	0.7%	0.0%	1.7%	1.2%
Considering	24.1%	30.6%	24.8%	19.3%	14.4%	31.8%
Not planned	65.1%	42.2%	67.4%	76.1%	81.0%	56.6%

Table 4-24
Status of Two-Factor Authentication

	ALL	DR	MA	BA	AA	OTHER
Deployed	9.3%	23.9%	6.7%	6.6%	2.3%	8.1%
Piloting	4.2%	8.9%	3.0%	4.1%	1.7%	4.0%
In progress	4.5%	8.9%	3.3%	1.5%	5.2%	4.6%
Considering	37.0%	40.0%	43.0%	29.4%	24.7%	45.7%
Not planned	45.0%	18.3%	44.1%	58.4%	66.1%	37.6%

deployed or are considering deployment—and conversely, a significantly smaller percentage of DR than other types of institutions have no plans to deploy token technology. There were no significant differences in the adoption of this technology from the 2006 and 2007 survey results.

Table 4-24 shows a pattern similar to that noted for tokens, with two-factor authentication being in the early stages of adoption. Again, doctoral institutions are more aggressively deploying, piloting, in the process of deploying, and considering deployment of this technology than the other types of institution. Comparing last year's and this year's survey results, there was an increase in the percentage of ALL respondents having deployed, being in the process of deploying, or considering this technology and a corresponding decrease in the number that do not plan to deploy it.

Security Practices

The final area of analysis in this section is security practices, 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. However, experience has shown that a single firewall is not adequate for security because 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 4-25 shows various strategies currently being employed and their relative frequency within each of the Carnegie groups.

Overall, not a single campus this year indicated that they have no firewalls, with the most common strategy being the deployment of a firewall at the external Internet connection (90.5%). This is true for a very large percentage of schools in all categories except doctoral institutions, which more often reported deploying firewalls around high-security servers and by or for individual departments. Looking at the schools in the matched data set, there was a net increase for ALL respondents in the use of firewalls around certain high-security servers or networks since the 2006 survey. Finally, there was an increase in the percentage of schools deploying personal firewall products at for ALL respondents, with a significant increase at BA institutions.

Table 4-26 shows the patterns and use

Table 4-25
Campus Firewall Strategies

	ALL	DR	MA	BA	AA	OTHER
Firewall at external Internet connection	90.5%	70.6%	94.4%	95.9%	97.1%	92.5%
Firewalls around certain high-security servers or networks	72.3%	93.9%	74.4%	60.9%	55.2%	76.9%
Firewalls deployed by or on behalf of individual departments	37.3%	83.9%	33.7%	16.2%	11.5%	44.5%
Campus site license for a personal firewall product	25.9%	29.4%	28.9%	21.8%	20.7%	27.2%
Plan to implement one or more firewalls	19.6%	35.0%	23.7%	10.7%	9.2%	17.9%
No firewalls	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 4-26
Security-Related Practices

	ALL	DR	MA	BA	AA	OTHER
All critical systems expeditiously patched or updated	96.9%	97.2%	97.0%	99.0%	98.9%	91.9%
Campus computers expeditiously patched or updated	90.2%	83.3%	91.5%	92.9%	95.4%	87.3%
Personal computers expeditiously patched or updated	52.0%	58.9%	55.9%	61.4%	29.3%	50.9%
Proactive scans in critical systems	78.6%	89.4%	81.9%	75.1%	69.5%	75.1%
Proactive scans in campus computers connected to the network	63.9%	71.1%	67.0%	59.9%	57.5%	62.4%
Proactive scans in PCs connected to the network	39.8%	57.8%	43.3%	41.6%	21.3%	39.8%
Security system includes intrusion detection system	62.8%	82.8%	65.2%	57.4%	46.6%	60.7%

of software patches and other practices to ensure security on campus. The most common practice is requiring all critical systems to be expeditiously patched or updated, with nearly 97% of ALL respondents reporting this practice and no significant differences among Carnegie groups.

The second most common practice is requiring campus computers to be expeditiously patched or updated, with over 90% of ALL respondents reporting this practice. Conducting proactive scans to detect known security exposures in critical systems is the third most common practice, with nearly 79% of ALL respondents reporting this. The least reported practice is conducting proactive scans to detect known security exposures in all personally owned computers connected to the campus network, reported by just under 40% of ALL respondents.

The survey asked if the respondent campus has actually undertaken an IT security risk assessment. As seen in Table 4-27, more than 68% of ALL campuses responded in the affirmative. Looking at the Carnegie groups, some significant differences are apparent. More than

Table 4-27
Campus IT Security Risk Assessment

	ALL	DR	MA	BA	AA	OTHER
Yes	68.1%	85.0%	71.1%	50.3%	65.5%	68.8%
No	31.9%	15.0%	28.9%	49.7%	34.5%	31.2%

Table 4-28
Status of End-User Authentication for Network Access

	ALL	DR	MA	BA	AA	OTHER
Currently require end-user authentication for all network access	60.0%	43.3%	63.3%	68.5%	62.6%	59.5%
In process of implementing end-user authentication requirement for all network access	13.3%	13.9%	15.2%	11.7%	11.5%	13.3%
Planning to require end-user authentication for all network access	9.2%	12.8%	9.6%	4.6%	12.6%	9.2%
Considering end-user authentication requirement for all network access	9.2%	17.2%	6.3%	10.7%	8.6%	9.2%
No plans for requiring end-user authentication for all network access	4.6%	5.0%	1.9%	1.0%	2.9%	4.6%
Other	4.0%	7.8%	3.7%	3.6%	1.7%	4.0%

85% of responding doctoral institutions reported having undertaken risk assessments, while only about half of the BA respondents reported having conducted such an assessment. There was a significant increase in the use of risk assessments by ALL schools since the 2006 survey, as well as MA, BA, and AA institutions.

The results shown in Table 4-28 indicate that 60% of ALL respondents require end-user authentication for obtaining network access, as a component of overall security strategies. Another 22.5% of this group are either in the process of implementing this requirement or are planning to do so, with an additional 9% considering it. Less than 5% of ALL respondents reported having no plans for such a requirement. Doctoral institutions required end-user authentication significantly less than the other types of institutions. Since the 2006 survey, there was a significant increase in the percentage of ALL institutions that reported requiring end-user authentication for all network access, with significant increases found also for BA and AA institutions.

FIVE

Information Systems

The need to provide better campus decision support systems with an integrated view of data is critically important to campuses in order to manage the complexities of our institutions in a turbulent market environment. 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 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 in the top five issues in the EDUCAUSE Current Issues Survey in each of the past seven years.[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, approximately 75% of ALL institutions reported having implemented or being in the process or RFP stage of implementing an ERP, with only about 18% reporting no plans to do so. That level of implementation is similar for the various Carnegie groups analyzed. Overall, the percentage of institutions that have completed an ERP project implementation increased significantly from the 2006 to the 2007 survey, rising to over 55% for the matched data set, with this change largely due to significant increases at DR and AA institutions.

Table 5-2 shows the percentage of overall ERP costs spent or projected to be spent on various elements of the project by schools that reported such a project completed, in process, or in the RFP stage. Compared to the other groups, doctoral institutions reported spending the least proportionally on software maintenance, software and licenses, and training,

Table 5-1
ERP Project Status

	ALL	DR	MA	BA	AA	OTHER
Implementation completed	55.4%	56.1%	61.9%	62.4%	44.3%	48.0%
Implementation in process	16.8%	21.7%	16.3%	13.2%	21.8%	11.6%
RFP stage	1.8%	1.7%	2.2%	1.5%	2.3%	1.2%
Considering	7.6%	10.0%	4.1%	6.1%	7.5%	12.7%
No plans	18.3%	10.6%	15.6%	16.8%	24.1%	26.6%

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

	ALL	DR	MA	BA	AA	OTHER
Software and licenses	23.8%	16.6%	25.0%	29.7%	21.8%	24.7%
Software maintenance	11.4%	8.4%	12.5%	13.2%	12.6%	9.3%
Training	8.4%	6.0%	8.4%	9.4%	10.8%	7.8%
In-house staff costs	19.8%	22.6%	18.9%	19.6%	16.7%	21.2%
Consulting fees	20.6%	26.9%	20.4%	13.1%	20.1%	24.0%
Hardware	11.2%	11.7%	11.3%	9.5%	12.1%	11.5%
Other	4.9%	7.8%	3.5%	5.6%	6.0%	1.5%

but this may well be an artifact of their greater spending on consulting fees. Doctoral institutions also reported spending a notable proportion on in-house staff costs. This finding, in combination with their higher percentage of consulting costs, reflects the substantial personnel commitment required to implement such systems at large, complex institutions. The percentage spent on hardware was comparable across institutional types. Since last year, there was a significantly greater amount spent on software maintenance and consulting among ALL respondents; MA, BA, and AA schools showed significant increases in all of the categories of ERP expenses; and DR institutions showed a significant increase only for software and licenses.

System Implementation Strategies

The survey requested information about methods of developing and implementing information systems in general, including the types of system modifications campuses make when purchasing systems. There have long been vigorous discussions about the appropriateness of building versus buying administrative systems. A 2002 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 each method does not sum to 100%. Some findings with regard to implementation strategies include the following:

- Purchasing a commercial product and customizing it was the most often reported acquisition strategy (77.5% of ALL institutions).
- The strategy of purchasing a commercial product without customization was the second most common strategy reported overall. BA schools were the only group that reported a greater use of this strategy than purchasing and customizing a software package.
- The use of an open source product, with or without modification, was reported by nearly 51% of ALL respondents, up from about 47% last year and from 32% in 2005. This strategy was most common at DR institutions and least common at AA institutions.
- The least often reported strategy was outsourcing administrative systems, followed by enhancing legacy systems/providing web interfaces and developing systems in partnership with a vendor. The latter strategy is used most at doctoral institutions and least at AA colleges.
- Developing systems in-house was reported more often by doctoral than MA, BA, and AA 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 smaller staffs at other types of institution.
- The strategy of buying a package of integrated systems was reported by about 63% of ALL respondents, most used by doctoral institutions and least

Table 5-3
Strategies for Acquiring Information Systems

	ALL	DR	MA	BA	AA	OTHER
Develop systems in-house	58.8%	69.4%	54.8%	58.4%	46.6%	66.5%
Develop systems in partnership with a vendor	43.7%	50.6%	45.2%	39.1%	32.2%	50.9%
Purchase a commercial product without customization	74.8%	81.7%	74.4%	77.7%	69.5%	70.5%
Purchase a commercial product with customization	77.5%	87.2%	77.8%	69.5%	71.8%	81.5%
Use an open source product, with or without customization	50.5%	62.8%	46.7%	54.8%	35.1%	54.3%
Buy best-of-breed applications	53.8%	69.4%	55.9%	46.2%	35.6%	61.3%
Buy a package of integrated systems	62.9%	72.2%	66.3%	63.5%	58.0%	52.0%
Enhance legacy systems and provide web interfaces	43.9%	61.1%	39.3%	42.6%	25.9%	52.6%
Outsource administrative systems	14.1%	18.3%	14.4%	14.2%	9.2%	13.9%
Other	2.0%	3.9%	1.5%	1.5%	0.6%	2.9%

Table 5–4
Percent of Institutions That Modify Commercial Packages

	ALL	DR	MA	BA	AA	OTHER
Yes	79.5%	94.4%	81.1%	76.1%	64.4%	80.3%
No	20.5%	5.6%	18.9%	23.9%	35.6%	19.7%

used by AA and OTHER schools. Nearly 54% of ALL respondents reported buying best-of-breed applications, with much more variation among Carnegie groups for this strategy.

- The strategy of enhancing legacy systems is used significantly more at doctoral institutions (more than 61%). This finding is congruent with a finding reported below that doctoral institutions overall have older systems, which might lead them to enhance these systems with more friendly web-based front ends to keep them going rather than replace them.
- It is interesting to note that since the 2006 survey, there was a significant increase in the use of six of the nine strategies for ALL institutions (all but developing systems in-house, purchasing a commercial product and customizing it, and enhancing legacy systems/ providing web interfaces).

Modifying commercial software packages is a more commonly used strategy than expected at all types of institution. The data in Table 5-4 indicate that about 80% of ALL respondents buy and modify commercial software packages, with this number up significantly from last year for ALL institutions. This practice was reported most by doctoral institutions. It is important, therefore, to understand if there are any differences in the kind of modifications made. Table 5-5 shows that the most common method of modification among ALL institutions that buy and modify software is modification of the system configuration, followed by modification of external modules. Far less modification of underlying code was

Table 5–5
Method and Extent of Modification of Commercial Packages

	ALL*	DR	MA	BA	AA	OTHER
Modify underlying code	47.1%	59.4%	43.4%	42.0%	44.6%	45.3%
Modify configuration	88.9%	91.8%	84.5%	93.3%	87.5%	88.5%
Modify external modules	77.6%	85.3%	82.2%	69.3%	60.7%	83.5%
Other	4.2%	4.7%	3.2%	2.0%	8.9%	3.6%

**N = 790*

Table 5-6
Percentage of Institutions Having Various Major Information Systems

	ALL	DR	MA	BA	AA	OTHER
Student information system	98.8%	100.0%	100.0%	99.0%	97.1%	97.1%
Financial information system	98.5%	99.4%	99.6%	99.0%	96.0%	97.7%
Human resources system	94.5%	98.3%	98.5%	89.3%	90.8%	93.6%
Development system	79.5%	91.1%	88.1%	92.9%	50.6%	67.6%
Library information system	89.0%	90.0%	91.5%	89.8%	82.8%	89.6%
Course management system	97.5%	100.0%	98.5%	98.0%	94.3%	95.4%
Grants management system	43.7%	87.2%	40.4%	25.9%	19.5%	48.0%

reported. All of these methods increased significantly from the 2006 to the 2007 survey for institutions in the matched data set.

Seven Types of Information Systems

Respondents were asked to provide data about seven types of information systems commonly found on college campuses. Data are presented in Tables 5-6 and 5-7 for these systems with respect to whether they are present on the campus, when they were implemented, plans for implementing a new system, whether they are provided at the system or district level when schools are part of a multicampus system, and the vendors reported for commercial systems.

Table 5-6 presents the average percentage of institutions that reported having 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 for these two types of systems.
- Human resource systems are common across all groups, but fewer BA and AA colleges than other types of schools reported having these.
- Development systems are the second least reported type of system (after grants management systems at about 44%), with about 80% of ALL institutions having such systems. AA and OTHER colleges employ development systems significantly less than other types of institution, and BA colleges have the highest deployment of such systems (93%).
- Library systems are nearly ubiquitous, with 89% of ALL respondents having such systems in place, with no significant differences found among groups.
- Course management systems are nearly universally in use at all types of institution, with 98% or more of DR, MA, and BA institutions reporting having these systems.
- The use of grants management systems directly correlates with the research mission of the institution, with more than 87% of doctoral institutions and only about two-fifths of MA, one-quarter of BA, and one-fifth of AA colleges reporting use of these systems.

Table 5-7
Year of Implementation for Various Information Systems

	ALL	DR	MA	BA	AA	OTHER
Student System						
Mean	1997.5	1996.6	1997.1	1997.4	1998.9	1998.0
Median	1999.0	1998.5	1998.0	1999.0	2000.0	1999.0
Financial Information System						
Mean	1998.0	1997.1	1998.0	1997.1	2000.0	1997.7
Median	1999.0	1999.0	1999.0	1999.0	2000.0	1999.0
HR System						
Mean	1998.5	1998.3	1998.3	1998.2	1999.1	1998.9
Median	2000.0	1999.0	2001.0	2000.0	2000.0	2000.0
Development System						
Mean	1999.0	1998.8	1998.7	1998.3	2001.2	1999.4
Median	1999.0	1999.0	1999.0	1999.0	2000.0	1999.0
Library System						
Mean	1998.7	1997.9	1998.7	1998.3	2000.1	1998.4
Median	1999.0	1998.5	1999.0	1999.0	2001.0	1999.0
Course Management System						
Mean	2001.8	2001.2	2001.5	2002.1	2002.5	2002.1
Median	2001.0	2000.0	2001.0	2002.0	2002.0	2001.0
Grants Management System						
Mean	2000.7	2000.4	2000.6	1999.5	2002.5	2001.4
Median	2002.0	2002.0	2002.0	2002.0	2002.5	2002.5

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. 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 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 when systems were implemented, thereby reducing this value. This is likely because of legacy systems that may date back to the late 1970s or early 1980s.

Table 5-7 shows that the oldest systems reported by any group are the student systems reported by doctoral institutions, as was the case the past several years. On average, for ALL respondents, these systems are more than 10 years old. Financial information systems are the second oldest, with course management systems the most recently implemented of all the systems examined. This latter finding is not surprising because such systems are relatively new to the marketplace compared to other types of systems that have been available for decades. Although the numbers are not significantly different, it is worth noting that doctoral institutions appear to have been the first to implement course management systems. In terms of trends from the 2006 to the 2007 survey, all seven of the information systems showed a significant increase in the replacement year for ALL respondents, that is, the mean year of implementation increased significantly (became more recent), thus reflecting replacement, as was also the case last year.

Table 5-8 shows the percentage of campuses

Table 5-8
Percentage of Campuses Expecting to Implement a New System in the Next Three Years

	ALL	DR	MA	BA	AA	OTHER
Student information system	17.8%	22.2%	16.3%	15.7%	13.8%	22.0%
Financial information system	13.8%	18.9%	8.1%	13.2%	14.9%	16.8%
Human resources system	14.3%	15.6%	12.2%	11.2%	17.8%	16.2%
Development system	11.7%	13.9%	11.1%	14.2%	7.5%	11.6%
Library system	6.1%	6.1%	7.4%	3.6%	5.2%	8.1%
Course management system	14.3%	12.2%	11.9%	17.8%	14.9%	15.6%
Grants management system	15.0%	32.8%	14.4%	5.6%	6.3%	16.8%

Table 5-9
Percentage of Various Systems Provided at the System/District Level

	ALL	DR	MA	BA	AA	OTHER
Student information system	21.5%	16.7%	18.5%	14.7%	46.6%	13.9%
Financial information system	27.5%	22.2%	34.8%	14.7%	47.7%	15.6%
Human resources system	26.2%	24.7%	34.4%	12.7%	43.7%	15.6%
Development system	7.7%	10.6%	8.5%	6.1%	9.2%	4.0%
Library system	24.0%	15.0%	25.2%	16.2%	46.6%	17.9%
Course management system	19.3%	10.6%	20.0%	10.7%	43.7%	12.7%
Grants management system	7.5%	16.1%	6.3%	6.1%	3.4%	6.4%

expecting to implement a new system in the next three years. Note a mostly consistent correlation between the age of the system and plans to implement a new system. For example, about 22% of doctoral institutions, which have the oldest of such systems, plan to implement new student information systems in the next three years. Such a correlation is also notable with respect to the propensity of a group not to have a type of system and that group's implementation plans for that system—for example, while fewer AA institutions have development systems, it is also the case that much lower percentages of these schools plan to implement such systems. The most notable change in the data for this question from the 2006 to the 2007 survey is that for ALL institutions there was a net decrease in the schools planning to implement a new student system, with this decrease significant for DR and AA institutions.

Table 5-9 presents the percentage of various information systems provided at the system/district level. Overall, the data show that the percentage of AA schools reporting systems provided at the district level is much greater than other Carnegie groups. Most of the types of information systems are provided two to three times more often by the district for these schools, except for development systems and grants management systems, which Table 5-6 shows are already much less prevalent at AA colleges. This finding is not surprising, given that the majority of these schools are public community colleges, many of them part of a broader community college district.

Finally, quite different patterns of vendors of the various types of information systems are associated with each of the Carnegie groups, as reflected in Tables 5-10 to 5-16. A word of explanation concerning the data captured about specific system vendors is warranted. Each table lists the vendors, in descending order, who were named by 5% or more of respondents who indicated having

Table 5-10
Student Information System Vendors Reported by 5% or More of Respondents

ALL Institutions

SunGard Higher Education	39.1%
Oracle/PeopleSoft	16.2%
Datatel	13.8%
Homegrown	12.7%
Jenzabar	10.7%

Doctoral Institutions

SunGard Higher Education	48.3%
Oracle/PeopleSoft	23.9%
Homegrown	18.3%

MA Institutions

SunGard Higher Education	45.6%
Datatel	15.6%
Oracle/PeopleSoft	15.2%
Jenzabar	11.1%
Homegrown	9.3%

BA Institutions

SunGard Higher Education	32.3%
Jenzabar	25.6%
Datatel	22.1%
Homegrown	7.2%
Oracle/PeopleSoft	6.7%

AA Institutions

SunGard Higher Education	39.1%
Oracle/PeopleSoft	24.9%
Datatel	13.0%
Homegrown	9.5%
Jenzabar	5.9%

OTHER Institutions

SunGard Higher Education	26.5%
Homegrown	21.7%
Datatel	13.3%
Oracle/PeopleSoft	12.0%
Jenzabar	5.4%

Table 5-11
Financial System Vendors Reported by 5% or More of Respondents

ALL Institutions

SunGard Higher Education	28.4%
Oracle/PeopleSoft	20.3%
Datatel	12.7%
Jenzabar	9.3%
Homegrown	7.1%
Oracle/Oracle	5.7%

Doctoral Institutions

SunGard Higher Education	34.6%
Oracle/PeopleSoft	27.9%
Homegrown	10.1%
Oracle/Oracle	8.9%

MA Institutions

SunGard Higher Education	29.7%
Oracle/PeopleSoft	23.0%
Datatel	13.4%
Jenzabar	10.4%
Homegrown	7.1%
SAP	5.6%

BA Institutions

SunGard Higher Education	29.7%
Jenzabar	23.1%
Datatel	21.5%
Oracle/PeopleSoft	8.2%

AA Institutions

SunGard Higher Education	29.9%
Oracle/PeopleSoft	28.1%
Datatel	13.8%
Homegrown	7.8%
Jenzabar	5.4%

OTHER Institutions

SunGard Higher Education	16.7%
Oracle/Oracle	15.5%
Oracle/PeopleSoft	14.3%
Datatel	11.3%
Homegrown	6.5%
SAP	5.4%

Table 5-12
Human Resources System Vendors Reported by 5% or More of Respondents

ALL Institutions

SunGard Higher Education	26.7%
Oracle/PeopleSoft	22.5%
Datatel	12.1%
Homegrown	9.6%
Jenzabar	6.0%

BA Institutions

SunGard Higher Education	29.5%
Datatel	22.0%
Jenzabar	19.1%
Oracle/PeopleSoft	10.4%
Homegrown	5.2%

Doctoral Institutions

Oracle/PeopleSoft	34.5%
SunGard Higher Education	31.1%
Homegrown	11.9%
Oracle/Oracle	5.6%

AA Institutions

SunGard Higher Education	29.3%
Oracle/PeopleSoft	27.4%
Datatel	13.4%
Homegrown	11.5%

MA Institutions

SunGard Higher Education	27.7%
Oracle/PeopleSoft	21.6%
Datatel	13.3%
Homegrown	10.2%
Jenzabar	6.1%
SAP	5.7%

OTHER Institutions

Oracle/PeopleSoft	19.1%
SunGard Higher Education	14.6%
Concept	10.2%
Datatel	9.6%
Homegrown	8.9%
Oracle/Oracle	5.7%
SAP	5.7%

Table 5-13
Development System Vendors Reported by 5% or More of Respondents

ALL Institutions

SunGard Higher Education	31.3%
Blackbaud	28.1%
Datatel	10.3%
Jenzabar	7.6%

BA Institutions

SunGard Higher Education	28.6%
Blackbaud	20.9%
Datatel	18.1%
Jenzabar	15.4%

Doctoral Institutions

SunGard Higher Education	54.6%
Blackbaud	10.4%
JSI/Best	7.4%
Oracle/PeopleSoft	6.7%

AA Institutions

Blackbaud	46.5%
SunGard Higher Education	17.8%
Oracle/PeopleSoft	7.0%
Jenzabar	5.8%

MA Institutions

Blackbaud	32.9%
SunGard Higher Education	30.8%
Datatel	11.8%
Jenzabar	7.6%

OTHER Institutions

Blackbaud	41.4%
SunGard Higher Education	13.5%
Homegrown	7.2%
Datatel	7.2%
Jenzabar	6.3%

that system. Note that these vendors are categorized by corporate name, not by individual product. Thus there may be several products combined under a single vendor, or in the case of acquisitions or mergers, several companies may now be included under the com-

Table 5-14
Library System Vendors Reported by 5% or More of Respondents

ALL Institutions

Ex Libris	32.2%
Innovative Interfaces	28.0%
SirsiDynix	17.2%

BA Institutions

Innovative Interfaces	37.9%
Ex Libris	22.6%
SirsiDynix	18.6%

Doctoral Institutions

Ex Libris	40.1%
Innovative Interfaces	32.1%
SirsiDynix	16.7%

AA Institutions

Ex Libris	36.8%
SirsiDynix	17.4%
Innovative Interfaces	11.8%

MA Institutions

Ex Libris	35.0%
Innovative Interfaces	30.9%
SirsiDynix	14.2%

OTHER Institutions

Ex Libris	26.1%
Innovative Interfaces	22.9%
SirsiDynix	20.9%

Table 5-15
Course Management System Vendors Reported by 5% or More of Respondents

ALL Institutions

Blackboard/Blackboard	40.6%
Blackboard/WebCT	25.7%
Open Source	9.3%
Desire2Learn	6.5%

BA Institutions

Blackboard/Blackboard	35.0%
Blackboard/WebCT	29.4%
Open Source	15.3%
Jenzabar	10.4%

Doctoral Institutions

Blackboard/Blackboard	45.6%
Blackboard/WebCT	25.2%
Open Source	7.1%
Desire2Learn	5.3%

AA Institutions

Blackboard/WebCT	35.0%
Blackboard/Blackboard	29.4%
Desire2Learn	15.3%
Angel	10.4%

MA Institutions

Blackboard/Blackboard	44.7%
Desire2Learn	21.6%
Blackboard/WebCT	11.6%
Angel	6.8%

OTHER Institutions

Blackboard/WebCT	32.5%
Blackboard/Blackboard	27.6%
Open Source	12.3%
Homegrown	6.1%

pany that acquired or incorporated them.[3]

Note also that if a campus reported developing its own system, this is shown in the category of "homegrown," giving a sense of what types of institution are opting for this strategy. Respondents were also asked to indicate if the system is an open source product. So, like purchased systems, homegrown and open source solutions are included in the tables if these approaches were reported by at least 5% of institutions responding that a system is in use.

In the actual data available through the online database service to those who completed the core data survey, both these aggregate listings, as well as the specific product names, are available. For purposes of simplicity this report shows only the aggregate (normalized) data.

The percentage for the vendors reported in our survey is shown to help the reader understand the relative presence of these vendors within a given segment of the higher education community. Note that EDUCAUSE does not present these data as evidence of market share or vendor dominance.

Table 5-16
Grants Management System Vendors Reported by 5% or More of Respondents

ALL Institutions

Homegrown	25.7%
SunGard Higher Education	22.8%
Oracle/PeopleSoft	11.4%
Blackbaud	5.0%

Doctoral Institutions

Homegrown	32.2%
SunGard Higher Education	16.1%
Oracle/PeopleSoft	16.1%
COEUS/MIT	11.9%
InfoEd	9.1%
Oracle/Oracle	6.3%

MA Institutions

SunGard Higher Education	29.3%
Homegrown	17.4%
Oracle/PeopleSoft	9.8%
Datatel	8.7%
Blackbaud	6.5%

BA Institutions

SunGard Higher Education	52.3%
Homegrown	18.2%
Oracle/PeopleSoft	6.8%
Jenzabar	6.8%

AA Institutions

SunGard Higher Education	32.1%
Blackbaud	25.0%
Homegrown	10.7%
Datatel	10.7%
Jenzabar	7.1%

OTHER Institutions

Homegrown	34.3%
Research Master	14.3%
Oracle/PeopleSoft	10.0%
Oracle/Oracle	5.7%
SunGard Higher Education	5.7%
Blackbaud	5.7%

Table 5-17
Status of Web Portal Deployment

	ALL	DR	MA	BA	AA	OTHER
Implemented	53.3%	70.6%	50.4%	44.7%	42.5%	60.7%
In process	18.1%	10.6%	20.0%	20.8%	19.0%	19.1%
Planning	19.4%	11.7%	22.2%	21.3%	25.9%	14.5%
No plans	9.2%	7.2%	7.4%	13.2%	12.6%	5.8%

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 5-17 shows the various stages of portal deployment that characterize each of the Carnegie groups. About 91% of ALL responding institutions 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, while BA and AA colleges reported the fewest portals deployed. More BA and AA institutions than schools in other categories reported no plans to implement a web portal. The percentage of schools that had implemented a portal increased more than 5% from the 2006 to the 2007 survey for institutions in the matched data set, with a significant increase for AA institutions.

Looking at data from the institutions that reported a web portal implemented, in process, or planned, there are fairly distinct differences among Carnegie groups with regard to procurement strategies and characteristics of the portal. As evident in Table 5-18, all groups reported a myriad of strategies, but overall the strategy of deploying a purchased product was reported most often. Customizability of implemented or planned portals is shown in Tables 5-19 and 5-20. Portals at doctoral institutions

Table 5-18
Development and Procurement Strategies for Web Portals

	ALL*	DR	MA	BA	AA	OTHER
Developed in-house	13.5%	14.4%	11.6%	12.9%	9.2%	20.2%
Purchased product	69.8%	67.7%	70.0%	68.4%	81.6%	62.2%
Based on open source	11.0%	13.2%	11.2%	13.5%	3.9%	12.3%
Other	5.8%	4.8%	7.2%	5.3%	5.3%	5.3%

* *N* = 903

Table 5-19
Percentage of Web Portals Customizable by the Individual

	ALL*	DR	MA	BA	AA	OTHER
Yes	85.0%	92.8%	85.6%	85.4%	84.2%	76.7%
No	15.0%	7.2%	14.4%	14.6%	15.8%	23.3%

* *N* = 903

Table 5-20
Percentage of Web Portals Customized for Target Audiences

	ALL*	DR	MA	BA	AA	OTHER
Yes	91.9%	96.4%	89.6%	93.6%	91.4%	89.6%
No	8.1%	3.6%	10.4%	6.4%	8.6%	10.4%

* *N* = 903

Table 5-21
Percentages of Web Portal Customization for Specific Constituencies

	ALL*	DR	MA	BA	AA	OTHER
Current students	97.1%	98.8%	98.4%	97.7%	91.4%	98.2%
Prospective students	68.8%	73.1%	74.0%	75.4%	57.9%	59.5%
Faculty	94.4%	95.2%	96.4%	96.5%	93.4%	89.0%
Staff	93.8%	94.6%	94.4%	93.6%	93.4%	92.6%
External community	31.7%	29.3%	36.8%	33.9%	24.3%	30.7%
Alumni	53.9%	44.9%	58.8%	64.9%	42.8%	54.6%
Other	3.0%	2.4%	2.8%	4.7%	1.3%	3.7%

* *N* = 903

were more often reported to be customizable by the individual and customized for target audiences. There were no significant changes in customizability by the individual since the 2006 survey, but there was a statistically significant increase in the customization of portals for target audiences.

Table 5-21 shows the percentage of web customization for specific constituencies for institutions that have implemented, are in the process of implementing, or are planning to implement a web portal. There were few significant differences among the Carnegie groups and few significant changes from the 2006 to the 2007 survey.

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 campus, and so forth. Table 5-22 shows the extent

Table 5-22
Web Portal Integration with Campus Administrative Systems

	ALL*	DR	MA	BA	AA	OTHER
Yes	96.2%	99.4%	97.6%	95.3%	93.4%	94.5%
No	3.8%	0.6%	2.4%	4.7%	6.6%	5.5%

** N = 903*

to which campus portals are connected or will be connected to their administrative systems as reported by the institutions that have implemented, have in process, or plan portals. About 96% of ALL institutions in that subgroup reported that they have integrated or plan to integrate their web portals. This high level of integration of administrative systems and web portals is consistent across all Carnegie groups. There were no changes in the integration of such systems since the 2006 survey.

Notes

1. Summaries of the annual EDUCAUSE Current Issues Survey are available at http://www.educause.edu/issues/.
2. Robert B. Kvavik and Richard N. Katz et al., *The Promise and Performance of Enterprise Planning Systems for Higher Education* (Boulder, Colo.: EDUCAUSE Center for Applied Research, Research Study, Vol. 4, 2002). This publication is available at no charge through the EDUCAUSE website at http://www.educause.edu/LibraryDetailPage/666?ID=ERS0204.
3. An exception to this methodology was made for Oracle and Blackboard, which merged with PeopleSoft and WebCT, respectively, because of the two major product lines involved in each case. These are shown with the name of the merged corporation followed by a slash and the product line.

APPENDIX A

Historical Context

Finding useful and relevant comparative data for information technology 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,[1] 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 form.

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 these data annually.

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 fifteen years 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 continues today (see http://www.campuscomputing.net).

Another data collection activity, called the COSTS Project, was developed in the late 1990s by David Smallen and Karen Leach (now vice president for information technology and vice president for administration and finance, respectively, at Hamilton College) to identify and capture information about the cost of networking on campus (see http://www.costsproject.org). This activity for the most part attracted the participation of small liberal arts institutions.

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 our 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 (see http://www.educause.edu/ecar). Finally, an EDUCAUSE task force was convened in the fall of 2001 to consider establishing an ongoing core data collection activity similar to the earlier CAUSE

ID survey and service. The dozen members of this task force were representative of the demographic diversity of the EDUCAUSE membership, from small and large, public and private institutions as well as from schools with varying Carnegie classifications. The group recommended that the association develop a Core Data Service (CDS) that would disseminate a web-based survey instrument to collect data about information technology environments and practices on member campuses.

The goal of the CDS would be to provide

- 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
- an annual summary report about campus IT environments based on data contributed through the survey.

This new service was launched in December 2002 with the idea that it would not duplicate but rather cooperate with existing IT-related data collection efforts and explore opportunities to partner with other associations in such efforts. To that end, in the summer of 2005, leaders of EDUCAUSE and the COSTS Project agreed to integrate their respective efforts to gather and analyze data about the costs and environmental factors of information technology in higher education. Thus the annual EDUCAUSE core data survey now includes questions that enable former COSTS Project participants to use the CDS service to access the data they need for IT planning.

Note

1. CAUSE, the Association for the Management of Information Technology in Higher Education, was founded in 1971 as a nonprofit professional association, with an initial focus on administrative computing. Educom was a nonprofit consortium of higher education institutions whose mission was to facilitate the introduction of, use of, 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.

APPENDIX B

2007 Core Data Service Participating Institutions

The following 1,010 institutions had completed and submitted the 2007 EDUCAUSE core data survey at the time of the preparation of this report in August 2008. In parentheses after each institution's name is its 2000 Carnegie classification for U.S. institutions and the country in which it is located for international institutions. Results reported in this report are aggregates of data from the 994 surveys that were in the database when it was frozen in May 2008 for analysis.

Abilene Christian University (MA I)
Abraham Baldwin Agricultural College (AA)
Adelphi University (DR INT)
Adrian College (BA LA)
Agnes Scott College (BA LA)
Albany College of Pharmacy (HEALTH)
Albany State University (MA I)
Albion College (BA LA)
Alcorn State University (MA I)
Allegheny College (BA LA)
Alliant International University–San Diego (DR INT)
Alma College (BA LA)
American University (DR INT)
The American University in Cairo (Egypt)
American University of Beirut (Lebanon)
American University of Paris (France)
American University of Sharjah (United Arab Emirates)
Amherst College (BA LA)
Angelo State University (MA I)
Anne Arundel Community College (AA)
Appalachian State University (MA I)
Arizona State University (DR EXT)
Arkansas State University (MA I)
Armstrong Atlantic State University (MA I)
Art Center College of Design (ART)
Asbury College (BA GEN)
Ashland University (MA I)
Assumption College (MA I)
Athabasca University (Canada)
Atlanta Metropolitan College (AA)
Auburn University (DR EXT)
Augusta State University (MA I)
Augustana College (BA GEN)
Austin Peay State University (MA I)
Australian Catholic University (Australia)
Australian National University (Australia)
AUT University (New Zealand)
Avila University (MA I)
Azusa Pacific University (MA I)
Babson College (BUS)
Bainbridge College (AA)
Baldwin-Wallace College (MA I)
Ball State University (DR INT)
The Banff Centre (Canada)
Barry University (MA I)
Barton County Community College (AA)
Bastyr University (MA I)
Bates College (BA LA)
Bay Path College (BA AA)
Baylor University (DR INT)
Beloit College (BA LA)
Bemidji State University (MA II)
Benedictine University (MA I)
Berea College (BA LA)
Berklee College of Music (ART)
Berkshire Community College (AA)
Berry College (BA GEN)
Bethany Lutheran College (AA)
Bethel University (MA I)
Big Sandy Community & Technical College (AA)
Biola University (DR INT)
Birmingham-Southern College (BA LA)
Bismarck State College (AA)
Black Hills State University (BA GEN)
Bloomsburg University of Pennsylvania (MA I)

Blue Ridge Community and Technical College (AA)
Blue Ridge Community College (AA)
Bluefield College (BA GEN)
Bluffton University (BA GEN)
Boise State University (MA I)
Bond University (Australia)
Boston College (DR EXT)
Bow Valley College (Canada)
Bowdoin College (BA LA)
Bowie State University (MA I)
Bradley University (MA I)
Brandeis University (DR EXT)
Brenau University (MA I)
Bridgewater College (BA LA)
Bridgewater State College (MA I)
Broome Community College (AA)
Brown University (DR EXT)
Bryn Mawr College (BA LA)
Bucknell University (BA LA)
Buffalo State College (MA I)
Butler Community College (AA)
Butler County Community College (AA)
Caldwell College (BA GEN)
California College of the Arts (ART)
California Institute of Integral Studies (OTHER)
California Institute of the Arts (ART)
California Lutheran University (MA I)
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, East Bay (MA I)
California State University, Fresno (MA I)
California State University, Fullerton (MA I)
California State University, Long Beach (MA I)
California State University, Los Angeles (MA I)
California State University, Monterey Bay (BA LA)
California State University, Northridge (MA I)
California State University, Sacramento (MA I)
California State University, San Bernardino (MA I)
California State University, San Marcos (MA I)
California State University, Stanislaus (MA I)
California University of Pennsylvania (MA I)
Calvin College (BA GEN)
Camosun College (Canada)
Canadian University College (Canada)
Canisius College (MA I)
Cardinal Stritch University (MA I)
Carl Albert State College (AA)
Carleton College (BA LA)
Carleton University (Canada)
Carnegie Mellon University (DR EXT)
Carroll University (BA GEN)
Case Western Reserve University (DR EXT)
Castleton State College (MA II)
Catawba College (BA GEN)
The Catholic University of America (DR EXT)
Cedar Crest College (BA GEN)
Cedarville University (BA GEN)
Central College (BA GEN)
Central Connecticut State University (MA I)
Central Lakes College (AA)
Central Michigan University (DR INT)
Central Piedmont Community College (AA)
Central Virginia Community College (AA)
Centre College (BA LA)
Century College (AA)
Chapman University (MA I)
Charles Darwin University (Australia)
Charles Drew University of Medicine & Science (HEALTH)
Charles Sturt University (Australia)
Charleston Southern University (MA I)
Charter Oak State College (BA LA)
Chattanooga State Technical Community College (AA)
Chesapeake College (AA)
Chicago State University (MA I)
Chippewa Valley Technical College (AA)
Chowan University (BA GEN)
Christopher Newport University (BA LA)
Cincinnati State College (AA)
The Citadel (MA I)
Claremont McKenna College (BA LA)
Clark State Community College (AA)
Clark University (DR INT)
Clarke College (BA GEN)
Clarkson College (HEALTH)
Clayton State University (BA AA)
Clemson University (DR EXT)
Cleveland State Community College (AA)
Coastal Georgia Community College (AA)
Colby College (BA LA)

Colgate University (BA LA)
College of DuPage (AA)
College of Menominee Nation (TRIBAL)
College of Mount Saint Joseph (MA II)
The College of New Jersey (MA I)
College of Saint Benedict/Saint John's University (BA LA)
The College of Saint Rose (MA I)
The College of Saint Scholastica (MA I)
College of Southern Nevada (AA)
College of the Holy Cross (BA LA)
College of the Ozarks (BA GEN)
College of the Siskiyous (AA)
College of William and Mary (DR INT)
College of Wooster (BA LA)
College universitaire de Saint-Boniface (Canada)
Colorado College (BA LA)
Colorado State University (DR EXT)
Columbia College Chicago (MA I)
Columbia State Community College (AA)
Columbia University (DR EXT)
Columbus State University (MA I)
Community College of Rhode Island (AA)
Community College of Vermont (AA)
Concordia College (BA GEN)
Concordia College–Moorhead (BA GEN)
Concordia Seminary (FAITH)
Concordia University at Austin (BA GEN)
Connecticut College (BA LA)
Coppin State University (MA I)
Corban College (BA GEN)
Cornell University (DR EXT)
Creighton University (MA I)
Crown College (BA GEN)
Curtin University of Technology (Australia)
Dabney S. Lancaster Community College (AA)
Dakota County Technical College (AA)
Dakota Wesleyan University (BA GEN)
Dalhousie University (Canada)
Dalton State College (AA)
Dana College (BA GEN)
Danville Community College (AA)
Dartmouth College (DR INT)
Darton College (AA)
Davenport University (BUS)
Davidson College (BA LA)
Dean College (AA)
Delaware State University (MA I)
Delta State University (MA I)
Denison University (BA LA)
DePaul University (DR INT)
DePauw University (BA LA)
Dickinson College (BA LA)
Dickinson State University (BA GEN)
Dodge City Community College (AA)
Drake University (MA I)
Drew University (BA LA)
Drexel University (DR INT)
Dubai Aerospace Enterprise University (United Arab Emirates)
Duke University (DR EXT)
Duquesne University (DR INT)
Durham College (Canada)
Dyersburg State Community College (AA)
Earlham College and Earlham School of Religion (BA LA)
East Carolina University (DR INT)
East Georgia College (AA)
East Stroudsburg University of Pennsylvania (MA I)
East Tennessee State University (DR INT)
Eastern Mennonite University (BA LA)
Eastern Michigan University (MA I)
Eastern Oregon University (MA II)
Eastern University (MA I)
Eastern Washington University (MA I)
Edgewood College (MA I)
Edison College (AA)
Edith Cowan University (Australia)
Elmhurst College (BA GEN)
Elon University (MA I)
Embry-Riddle Aeronautical University (OTHER)
Emory University (DR EXT)
Empire State College SUNY (MA I)
Estrella Mountain Community College (AA)
ETH Zurich (Switzerland)
Eureka College (BA GEN)
The Evergreen State College (BA LA)
Fairfield University (MA I)
Fairleigh Dickinson University (MA I)
Fairmont State University, including Pierpont Community and Technical College (BA GEN)
Fayetteville State University (MA I)
Ferrum College (BA GEN)
Fielding Graduate University (OTHER)
Finger Lakes Community College (AA)
Flagler College (BA GEN)
Flinders University (Australia)
Florence-Darlington Technical College (AA)
Florida Atlantic University (DR INT)

Florida Southern College (BA GEN)
Florida State University (DR EXT)
Fond du Lac Tribal and Community College (TRIBAL)
Fordham University (DR EXT)
Fort Belknap College (TRIBAL)
Fort Lewis College (BA LA)
Fort Valley State University (MA I)
Francis Marion University (MA I)
Franklin and Marshall College (BA LA)
Franklin University (BUS)
Franklin W. Olin College of Engineering (ENGR)
Frederick Community College (AA)
Frostburg State University (MA I)
Furman University (BA LA)
Gainesville State College (AA)
Gallaudet University (MA I)
Galveston College (AA)
Garrett College (AA)
GateWay Community College (AA)
Genesee Community College (AA)
George Brown College (Canada)
George Fox University (MA I)
George Mason University (DR INT)
The George Washington University (DR EXT)
Georgetown College (BA LA)
Georgia College & State University (MA I)
Georgia Gwinnett College (BA GEN)
Georgia Highlands College (AA)
Georgia Institute of Technology (DR EXT)
Georgia Perimeter College (AA)
Georgia Southern University (MA I)
Georgia Southwestern State University (MA I)
Georgia State University (DR EXT)
Georgian College (Canada)
Georgian Court University (MA I)
Germanna Community College (AA)
Gettysburg College (BA LA)
Glendale Community College (AA)
Gordon College (AA)
Gordon College (BA LA)
Gordon-Conwell Theological Seminary (FAITH)
Goshen College (BA LA)
Grace College and Seminary (BA GEN)
Graduate Theological Union (FAITH)
Grand Rapids Community College (AA)
Grand Valley State University (MA I)
Green Mountain College (BA GEN)
Greensboro College (BA LA)
Greenville College (BA GEN)
Griffin Technical College (AA)
Griffith University (Australia)
Grinnell College (BA LA)
Grove City College (BA GEN)
Guam Community College (AA)
Guilford College (BA LA)
Gustavus Adolphus (BA LA)
Gwynedd-Mercy College (MA II)
Hamilton College (BA LA)
Hamline University (MA I)
Harford Community College (AA)
Hartwick College (BA LA)
Harvard Law School (LAW)
Harvard University (DR EXT)
Harvey Mudd College (ENGR)
Haverford College (BA LA)
Hawaii Pacific University (MA I)
The Hebrew University of Jerusalem (Israel)
Henderson Community College (AA)
Hillsdale College (BA LA)
Hofstra University (DR INT)
Hong Kong Polytechnic University (Hong Kong)
Hood College (MA I)
Hope College (BA LA)
Hopkinsville Community College (AA)
Houston Baptist University (MA I)
Hudson Valley Community College (AA)
Humber Institute of Technology & Advanced Learning (Canada)
Humboldt State University (MA I)
Huston-Tillotson University (BA GEN)
Idaho State University (DR INT)
Illinois Central College (AA)
Illinois State University (DR INT)
Illinois Wesleyan University (BA LA)
Indiana State University (DR INT)
Indiana University (DR EXT)
Indiana University East (BA GEN)
Indiana University Kokomo (BA GEN)
Indiana University Northwest (MA I)
Indiana University of Pennsylvania (DR INT)
Indiana University South Bend (MA I)
Indiana University Southeast (MA I)
Indiana University–Purdue University Fort Wayne (MA I)
Indiana University–Purdue University Indianapolis (DR INT)
INTI International University College (Malaysia)
Inver Hills Community College (AA)
Iowa State University (DR EXT)

Ithaca College (MA I)
J. Sargeant Reynolds Community College (AA)
Jackson State Community College (AA)
Jackson State University (DR INT)
James Madison University (MA I)
John Brown University (BA GEN)
John Marshall Law School (LAW)
John Tyler Community College (AA)
Johnson County Community College (AA)
Johnson State College (MA I)
Kalamazoo College (BA LA)
Keene State College (MA II)
Kennesaw State University (MA I)
Kent State University (DR EXT)
Kent State University–Stark Campus (AA)
Kenyon College (BA LA)
Keyano College (Canada)
Keystone College (AA)
King's College (MA II)
Kirtland Community College (AA)
Kutztown University of Pennsylvania (MA I)
Kwantlen University College (Canada)
La Trobe University (Australia)
Lafayette College (BA LA)
Lake Forest College (BA LA)
Lake Region State College (AA)
Lake Superior College (AA)
Lamar Institute of Technology (OTHER)
Lamar State College–Orange (AA)
Lamar State College–Port Arthur (AA)
Lamar University (MA I)
Lane Community College (AA)
Langara College (Canada)
Lawrence Technological University (MA I)
Lawrence University (BA LA)
Le Moyne College (MA II)
Lee College (AA)
Lesley University (MA I)
Lethbridge College (Canada)
LeTourneau University (MA II)
Lewis & Clark College (BA LA)
Lewis University (MA I)
Liberty University (MA I)
Lincoln Memorial University (MA I)
Lindsey Wilson College (BA LA)
Linkopings Universitet (Sweden)
Linn-Benton Community College (AA)
Lipscomb University (MA II)
Lock Haven University of Pennsylvania (BA GEN)
Loras College (MA II)
Lord Fairfax Community College (AA)
Louisiana State University (DR EXT)
Loyola College in Maryland (MA I)
Loyola Marymount University (MA I)
Loyola University Chicago (DR EXT)
Luther College (BA LA)
Luther Seminary (FAITH)
Lutheran Theological Seminary at Gettysburg (FAITH)
Lynchburg College (MA I)
Lyndon State College (BA GEN)
Lynn University (MA I)
Lyon College (BA LA)
Macalester College (BA LA)
Macomb Community College (AA)
Macon State College (AA)
Madisonville Community College (AA)
Madonna University (MA I)
Manhattan College (MA I)
Mansfield University of Pennsylvania (MA I)
Marian University (MA II)
Marietta College (BA GEN)
Marion Technical College (AA)
Marist College (MA I)
Marquette University (DR EXT)
Marshall University (MA I)
Maryland Institute College of Art (ART)
Marywood University (MA I)
Massachusetts Bay Community College (AA)
Massachusetts College of Art and Design (ART)
Massey University (New Zealand)
Mayville State University (BA GEN)
McDaniel College (BA LA)
McGill University (Canada)
McHenry County College (AA)
McKendree University (BA GEN)
McMaster University (Canada)
McMurry University (BA GEN)
McPherson College (BA GEN)
Medical College of Georgia (MED)
Medical University of South Carolina (MED)
Memorial University of Newfoundland (Canada)
Mercer County Community College (AA)
Mercyhurst College (MA II)
Messiah College (BA GEN)
Metropolitan State University (MA II)
Miami Dade College (AA)
Miami University (DR INT)
Michigan State University (DR EXT)
Mid-America Christian University (FAITH)

Middle Georgia College (AA)
Middle Tennessee State University (DR INT)
Middlebury College (BA LA)
Millersville University of Pennsylvania (MA I)
Millikin University (BA GEN)
Mills College (BA LA)
Millsaps College (BA LA)
Minnesota State University Moorhead (MA I)
Minnesota West Community & Technical College (AA)
Minot State University (MA I)
Minot State University–Bottineau Campus (AA)
Misericordia University (HEALTH)
Mississippi State University (DR EXT)
Missouri Southern State University (BA GEN)
Missouri University of Science and Technology (DR INT)
MIT (DR EXT)
Mohave Community College (AA)
Monash University (Australia)
Monmouth College (BA LA)
Monroe Community College (AA)
Montana State University (DR INT)
Montana State University–Billings (MA I)
Montana State University–Great Falls, College of Technology (AA)
Montcalm Community College (AA)
Montgomery College (AA)
Montgomery County Community College (AA)
Montreat College (BUS)
Moody Bible Institute (FAITH)
Moraine Valley Community College (AA)
Morgan State University (MA I)
Motlow State Community College (AA)
Mott Community College (AA)
Mount Allison University (Canada)
Mount Holyoke College (BA LA)
Mount Marty College (MA II)
Mount Mary College (MA II)
Mount Royal College (Canada)
Mount Saint Mary College (MA I)
Mount St. Mary's College (MA I)
Mount Saint Mary's University (MA I)
Mount Union College (BA GEN)
Mount Vernon Nazarene University (BA GEN)
Mountain Empire Community College (AA)
Muhlenberg College (BA LA)
Murdoch University (Australia)
Muskingum College (BA LA)
Nanyang Technological University
Napier University (United Kingdom)
Naropa University (OTHER)
Nashville State Community College (AA)
National University (MA I)
National University of Singapore (Singapore)
Nazareth College of Rochester (MA I)
Nebraska Wesleyan University (BA LA)
Nevada State College (BA GEN)
New College of Florida (BA LA)
New Hampshire Technical Institute–Concord's Community College (AA)
New Jersey Institute of Technology (DR INT)
New Mexico State University (DR EXT)
New River Community College (AA)
New York University (DR EXT)
Niagara County Community College (AA)
Nipissing University (Canada)
Normandale Community College (AA)
North Carolina A&T State University (MA I)
North Carolina Central University (MA I)
North Carolina School of the Arts (ART)
North Carolina State University (DR EXT)
North Central Texas College (AA)
North Dakota State College of Science (AA)
North Dakota State University (DR INT)
North Georgia College & State University (MA I)
North Idaho College (AA)
North-West University (South Africa)
Northeast Community College (AA)
Northeast State Technical Community College (AA)
Northeastern Illinois University (MA I)
Northeastern University (DR EXT)
Northern Arizona University (DR INT)
Northern Illinois University (DR EXT)
Northern State University (MA I)
Northern Virginia Community College (AA)
Northland Community and Technical College–Thief River Falls (AA)
NorthTec (New Zealand)
Northwest Missouri State University (MA I)
Northwest Nazarene University (MA II)
Northwest University (BA GEN)
Northwestern Health Sciences University (HEALTH)
Northwestern Michigan College (AA)
Northwestern University (DR EXT)
Norwegian University of Science and Technology
Norwich University (MA I)

Nova Scotia Community College (Canada)
Nova Southeastern University (DR INT)
Oakland University (DR INT)
Oakwood University (BA GEN)
Oberlin College (BA LA)
Occidental College (BA LA)
Oglethorpe University (BA LA)
Ohio Northern University (BA GEN)
The Ohio State University (DR EXT)
Ohio University (DR EXT)
Ohio Wesleyan University (BA LA)
Okanagan College (Canada)
Oklahoma Baptist University (BA GEN)
Oklahoma Christian University (BA GEN)
Oklahoma State University (DR EXT)
Ontario College of Art & Design (Canada)
Orange County Community College (AA)
Oregon Health & Science University (MED)
Oregon Institute of Technology (BA GEN)
Oregon State University (DR EXT)
Osaka University (Japan)
Otterbein College (MA II)
Ouachita Technical College (AA)
Ozarks Technical Community College (AA)
Pace University (MA I)
Pacific Lutheran University (MA I)
Paradise Valley Community College (AA)
Patrick Henry Community College (AA)
Paul D. Camp Community College (AA)
Peace College (BA AA)
Pellissippi State Technical Community College (AA)
Pennsylvania College of Technology (BA AA)
Pepperdine University (DR INT)
Philadelphia University (MA I)
Piedmont Virginia Community College (AA)
Pikeville College (BA GEN)
Pima County Community College District (AA)
Pitzer College (BA LA)
Plymouth State University (MA II)
Point Park University (MA II)
Pomona College (BA LA)
Pontificia Universidad Javeriana Cali (Colombia)
Portland Community College (AA)
Portland State University (DR INT)
Prairie View A&M University (MA I)
Presbyterian College (BA LA)
Prince George's Community College (AA)
Princeton University (DR EXT)
Purchase College, SUNY (MA II)
Purdue University (DR EXT)
Purdue University Calumet (MA I)
Queen's University (Canada)
Queensland University of Technology (Australia)
Quinnipiac University (MA I)
Quinsigamond Community College (AA)
Rappahannock Community College (AA)
Raritan Valley Community College (AA)
Red Deer College (Canada)
Redeemer College (Canada)
Reed College (BA LA)
Reformed Theological Seminary (FAITH)
Regis University (MA I)
Rensselaer Polytechnic Institute (DR EXT)
Rhode Island School of Design (ART)
Rhodes College (BA LA)
Rhodes State College (AA)
Rice University (DR EXT)
Ridgewater College (AA)
Rio Salado College (AA)
Ripon College (BA LA)
Riverland Community College (AA)
Roane State Community College (AA)
Robert Morris University (MA I)
Roberts Wesleyan College (MA I)
Rochester Community and Technical College (AA)
Rochester Institute of Technology (MA I)
Rockhurst University (MA I)
Roosevelt University (MA I)
Rosalind Franklin University of Medicine and Science (MED)
Rosemont College (BA LA)
Rowan University (MA I)
Rutgers, The State University of New Jersey (DR EXT)
Ryerson University (Canada)
Sacramento City College (AA)
Sacred Heart University (MA I)
The Sage Colleges (MA I)
Saint Joseph's University (MA I)
Saint Louis Community College at Florissant Valley (AA)
Saint Louis Community College at Forest Park (AA)
Saint Louis Community College at Meramec (AA)
Saint Louis University (DR EXT)
Saint Mary's College of California (MA I)
Saint Mary's University of Minnesota (MA I)

Saint Mary-of-the-Woods College (BA GEN)
Saint Michael's College (MA I)
Saint Paul College, A Community & Technical College (AA)
Saint Paul's College (BA GEN)
Saint Vincent College (BA LA)
Saint Xavier University (MA I)
Salem State College (MA I)
Salve Regina University (MA I)
Sam Houston State University (MA I)
Samford University (MA I)
San Diego State University (DR INT)
San Francisco State University (MA I)
San Juan College (AA)
Santa Clara University (MA I)
Santa Fe Community College (AA)
Sarah Lawrence College (BA LA)
Savannah College of Art and Design (ART)
Savannah State University (MA II)
School of the Art Institute of Chicago (ART)
Seattle Central Community College (AA)
Seattle Pacific University (MA I)
Seattle University (MA I)
Seneca College of Applied Arts and Technology (Canada)
Seton Hall University (DR INT)
Sewanee: The University of the South (BA LA)
Seward County Community College (AA)
Sheridan College (AA)
Shippensburg University of Pennsylvania (MA I)
Siena Heights University (MA I)
Simmons College (MA I)
Simon Fraser University
Simpson College (BA GEN)
Sinclair Community College (AA)
Skidmore College (BA LA)
Smith College (BA LA)
Soka University of America (BA GEN)
Solano Community College (AA)
South Dakota School of Mines & Technology (ENGR)
South Dakota State University (DR INT)
South Florida Community College (AA)
South Georgia College (AA)
Southeast Community College (AA)
Southeast Kentucky Community and Technical College (AA)
Southern Adventist University (BA GEN)
Southern Cross University (Australia)
Southern Methodist University (DR EXT)
Southern Oregon University (MA I)
Southern Polytechnic State University (ENGR)
Southside Virginia Community College (AA)
Southwest Tennessee Community College (AA)
Southwest Virginia Community College (AA)
Southwestern Oregon Community College (AA)
Spring Hill College (MA I)
St. Ambrose University (MA I)
St. Bonaventure University (MA I)
St. Cloud State University (MA I)
St. Edward's University (MA II)
St. John Fisher College (MA II)
St. John's University (DR INT)
St. Lawrence College (Canada)
St. Lawrence University (BA LA)
St. Mary's College of Maryland (BA LA)
St. Olaf College (BA LA)
Stanford University (DR EXT)
Stark State College of Technology (AA)
State Fair Community College (AA)
Stephen F. Austin State University (MA I)
SUNY College at Fredonia (MA I)
SUNY College at Geneseo (MA I)
SUNY College at Oswego (MA I)
SUNY College at Plattsburgh (MA I)
SUNY College of Optometry (HEALTH)
SUNY College of Technology at Cobleskill (BA AA)
Susquehanna University (BA LA)
Swarthmore College (BA LA)
Sweet Briar College (BA LA)
Syracuse University (DR EXT)
Tarleton State University (MA I)
Taylor University (BA GEN)
Tecnologico de Monterrey (Mexico)
Tennessee State University (DR INT)
Tennessee Technological University (MA I)
Texas A&M Health Science Center (HEALTH)
Texas A&M International University (MA I)
Texas A&M University (DR EXT)
Texas A&M University at Galveston (BA LA)
Texas A&M University at Qatar (Qatar)
Texas A&M University–Commerce (DR INT)
Texas A&M University–Corpus Christi (MA I)
Texas A&M University–Kingsville (DR INT)
Texas A&M University–Texarkana (MA I)
Texas Christian University (DR INT)
Texas Lutheran University (BA GEN)
Texas State University–San Marcos (MA I)
Texas Wesleyan University (MA II)

Texas Woman's University (DR INT)
Thomas College (BUS)
Thomas Edison State College (MA II)
Thomas Jefferson University (MED)
Thomas Nelson Community College (AA)
Thompson Rivers University (Canada)
Tidewater Community College (AA)
Toccoa Falls College (BA GEN)
Towson University (MA I)
Trine University (BA GEN)
Trinity College (BA LA)
Trinity University (MA I)
Trinity Western University (Canada)
Truckee Meadows Community College (AA)
Truman State University (MA I)
Tufts University (DR EXT)
Tulane University (DR EXT)
Tunxis Community College (AA)
Ulster County Community College (AA)
Union College (BA LA)
Union University (MA II)
United States Air Force Academy (OTHER)
United States Coast Guard Academy (OTHER)
United States Naval Academy (OTHER)
Unity College (BA GEN)
Universidad de Los Andes (Colombia)
Universitat Oberta de Catalunya (Spain)
Universite de Lausanne (Switzerland)
Universite de Liege (Belgium)
Universite de Montreal (Canada)
University at Albany, SUNY (DR EXT)
University College Cork (Ireland)
University College Dublin (Ireland)
University College of the Fraser Valley (Canada)
The University of Adelaide (Australia)
University of Alabama (DR EXT)
University of Alabama at Birmingham (DR EXT)
University of Alaska Anchorage (MA I)
University of Alaska Fairbanks (DR INT)
University of Alaska Southeast (MA I)
The University of Arizona (DR EXT)
University of Arkansas (DR EXT)
University of Arkansas at Little Rock (DR INT)
The University of Auckland (New Zealand)
University of Ballarat (Australia)
University of Baltimore (MA I)
University of Bridgeport (DR INT)
The University of British Columbia (Canada)
University of Calgary (Canada)
University of California, Berkeley (DR EXT)
University of California, Davis (DR EXT)
University of California, Hastings College of the Law (LAW)
University of California, Irvine (DR EXT)
University of California, Riverside (DR EXT)
University of California, San Diego (DR EXT)
University of California, Santa Cruz (DR EXT)
University of Canberra (Australia)
University of Canterbury (New Zealand)
University of Central Florida (DR INT)
University of Central Missouri (MA I)
University of Cincinnati (DR EXT)
University of Colorado at Boulder (DR EXT)
University of Colorado Denver (DR INT)
University of Dayton (DR INT)
University of Delaware (DR EXT)
University of Detroit Mercy (MA I)
University of Dubuque (MA II)
The University of Findlay (MA I)
University of Florida (DR EXT)
University of Georgia (DR EXT)
University of Guelph (Canada)
University of Hawaii (DR EXT)
University of Houston (DR EXT)
University of Houston–Downtown (BA GEN)
University of Houston–Victoria (MA I)
University of Idaho (DR EXT)
University of Illinois at Springfield (MA I)
University of Illinois at Urbana-Champaign (DR EXT)
University of Indianapolis (MA I)
The University of Iowa (DR EXT)
University of Kansas (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 Manitoba (Canada)
University of Mary (MA I)
University of Mary Hardin–Baylor (MA I)
University of Mary Washington (MA I)
University of Maryland (DR EXT)
University of Maryland Eastern Shore (MA I)
University of Maryland, Baltimore County (DR EXT)
University of Massachusetts Amherst (DR EXT)
University of Massachusetts at Worcester (MED)
University of Massachusetts Boston (DR INT)
University of Massachusetts Dartmouth (MA I)
University of Massachusetts Lowell (DR INT)

The University of Melbourne (Australia)
The University of Memphis (DR EXT)
University of Miami (DR EXT)
University of Michigan–Ann Arbor (DR EXT)
University of Michigan–Dearborn (MA I)
University of Michigan–Flint (MA I)
University of Minnesota Duluth (MA I)
University of Minnesota–Crookston (BA GEN)
University of Mississippi (DR EXT)
University of Missouri–Columbia (DR EXT)
University of Missouri–Kansas City (DR INT)
The University of Montana (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, Las Vegas (DR INT)
University of Nevada, Reno (DR EXT)
University of New Hampshire (DR EXT)
University of New South Wales (Australia)
University of North Carolina at Chapel Hill (DR EXT)
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 Iowa (MA I)
University of Northwestern Ohio (AA)
University of Notre Dame (DR EXT)
University of Oklahoma Health Sciences Center (MED)
University of Ontario Institute of Technology (Canada)
University of Oslo (Norway)
University of Otago (New Zealand)
University of Ottawa (Canada)
University of Pennsylvania (DR EXT)
University of Puerto Rico at Ponce (BA GEN)
University of Puget Sound (BA LA)
The University of Queensland (Australia)
University of Redlands (MA I)
University of Regina (Canada)
University of Richmond (MA I)
University of Rochester (DR EXT)
University of Saint Francis (MA I)
University of Saint Mary (MA I)
University of San Diego (DR INT)
University of San Francisco (DR INT)
The University of Scranton (MA I)
University of Sioux Falls (MA II)
University of South Africa (South Africa)
University of South Australia (Australia)
University of South Carolina (DR EXT)
University of South Carolina Upstate (BA GEN)
University of South Carolina–Beaufort (BA AA)
The University of South Dakota (DR INT)
University of South Florida (DR EXT)
University of Southern California (DR EXT)
University of Southern Maine (MA I)
University of Southern Mississippi (DR INT)
University of Southern Queensland
University of St. Francis (MA I)
University of St. Thomas (MA I)
University of St. Thomas (DR INT)
University of Sydney (Australia)
University of Tasmania (Australia)
University of Technology, Sydney (Australia)
The University of Tennessee (DR EXT)
University of Tennessee at Chattanooga (MA I)
University of Tennessee at Martin (MA I)
The University of Texas at Arlington (DR EXT)
University of Texas at Austin (DR EXT)
University of Texas at Brownsville (MA I)
University of Texas at Dallas (DR INT)
University of Texas at El Paso (DR INT)
University of Texas at San Antonio (MA I)
University of Texas at Tyler (MA I)
University of Texas Health Center at Tyler (HEALTH)
The University of Texas Health Science Center at Houston (MED)
University of Texas HSC at San Antonio (MED)
The University of Texas M. D. Anderson Cancer Center (MED)
University of Texas Medical Branch (MED)
University of Texas of the Permian Basin (MA I)
University of Texas–Pan American (MA I)
The University of the Arts (ART)
University of the Incarnate Word (MA I)
University of the Pacific (DR INT)
University of the Sciences in Philadelphia (HEALTH)
University of the Sunshine Coast (Australia)
The University of Toledo (DR EXT)
University of Toronto (Canada)
University of Tulsa (DR INT)
University of Utah (DR EXT)

University of Vermont (DR EXT)
University of Victoria (Canada)
University of Virginia (DR EXT)
University of Waikato (New Zealand)
University of Washington (DR EXT)
University of Washington Bothell (MA I)
University of Washington, Tacoma (BA GEN)
University of Waterloo (Canada)
University of West Florida (MA I)
University of West Georgia (MA I)
University of Western Australia (Australia)
The University of Western Ontario (Canada)
University of Western Sydney (Australia)
University of Wisconsin–Eau Claire (MA I)
University of Wisconsin–Green Bay (MA II)
University of Wisconsin–La Crosse (MA I)
University of Wisconsin–Madison (DR EXT)
University of Wisconsin–Milwaukee (DR EXT)
University of Wisconsin–Oshkosh (MA I)
University of Wisconsin–Parkside (MA II)
University of Wisconsin–Platteville (MA I)
University of Wisconsin–River Falls (MA I)
University of Wisconsin–Stevens Point (MA I)
University of Wisconsin–Stout (MA I)
University of Wisconsin–Superior (MA I)
University of Wisconsin–Whitewater (MA I)
University of Wyoming (DR EXT)
Upper Iowa University (BA GEN)
Ursinus College (BA LA)
Ursuline College (MA I)
Valdosta State University (MA I)
Valley City State University (BA GEN)
Vancouver Community College (Canada)
Vanderbilt University (DR EXT)
Vassar College (BA LA)
Vermont Law School (LAW)
Vermont Technical College (ENGR)
Victoria College (AA)
Victoria University (Australia)
Victoria University of Wellington (New Zealand)
Villanova University (MA I)
Virginia Commonwealth University (DR EXT)
Virginia Highlands Community College (AA)
Virginia Western Community College (AA)
Volunteer State Community College (AA)
Wabash College (BA LA)
Wagner College (MA I)
Walsh University (MA I)
Walters State Community College (AA)
Washington & Jefferson College (BA LA)
Washington and Lee University (BA LA)
Washington College (BA LA)
Washington State University (DR EXT)
Waycross College (AA)
Wayne State University (DR EXT)
Wellesley College (BA LA)
Wesleyan University (BA LA)
West Chester University of Pennsylvania (MA I)
West Hills Community College District (AA)
West Kentucky Community and Technical College (AA)
West Liberty State College (BA GEN)
West Texas A&M University (MA I)
West Virginia School of Osteopathic Medicine (MED)
West Virginia University (DR EXT)
Western Carolina University (MA I)
Western Michigan University (DR EXT)
Western New Mexico University (MA I)
Western State College of Colorado (BA GEN)
Western Technical College (AA)
Western Washington University (MA I)
Westminster College (BA LA)
Westmont College (BA LA)
Wheaton College (BA LA)
Wheaton College (BA LA)
Wheelock College (MA I)
Whitman College (BA LA)
Whittier College (BA LA)
Wilkes University (MA I)
Willamette University (BA LA)
William Paterson University of New Jersey (MA I)
Williams College (BA LA)
Williston State College (AA)
Winona State University (MA I)
Winston-Salem State University (BA GEN)
Wisconsin Lutheran College (BA GEN)
Wofford College (BA LA)
Wor-Wic Community College (AA)
Worcester Polytechnic Institute (DR INT)
Wytheville Community College (AA)
Xavier University (MA I)
Yale University (DR EXT)
Yeshiva University (DR EXT)
York University (Canada)
Yuba College (AA)
Zane State College (AA)

APPENDIX C

2007 Core Data Survey Questionnaire

2007 EDUCAUSE Core Data Survey

When responding to the survey questions, please enter data that describe your current IT environment unless a question specifically requests data for the fiscal year 2006-2007.

Please note that for any term in the survey that is underlined there is a corresponding definition or explanation for that term in the glossary of terms which appears at the end of the printable version of the survey. When working with the survey online, simply clicking on the term will bring up its definition/explanation from the glossary.

IT Organization, Staffing, and Planning

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

2. To whom does the highest ranking technology administrator / officer on your campus report?

- ○ President / chancellor / CEO
- ○ Highest ranking academic officer (Provost, Academic VP, Dean)
- ○ Highest ranking administrative officer (Administrative VP, Executive VP)
- ○ Highest ranking business officer (Business Officer, CFO)
- ○ Second level academic officer (Vice Provost, Assistant or Associate Provost / Academic VP)
- ○ Second level administrative officer (Assistant or Associate Administrative VP)
- ○ Reports jointly to president / chancellor / CEO *and* chief academic officer
- ○ Reports jointly to chief academic officer *and* chief administrative or financial officer
- ○ Other

3. What functions report to or are included in the responsibilities of the highest ranking information technology administrator / officer on your campus? (Check all that apply.) Note: these categories are not intended to match the functional areas into which you are asked to place numbers of FTE staff or to report sources of funding; this question is intended to identify organizational areas for which the top technology administrator has responsibility to help identify colleagues with similar organizational responsibilities.

- ☐ Academic Computing
- ☐ Administration of IT Organization
- ☐ Administrative Information Systems
- ☐ Computer Store
- ☐ Desktop Computing, User Support Services, Training, Help Desk
- ☐ Enterprise Infrastructure and Services, Identity Management

- [ ] Distance Education
- [ ] Institutional Research
- [ ] Instructional Technology
- [ ] Information Technology in an Affiliated Hospital
- [ ] Information Technology Planning and Budgeting
- [ ] Information Technology Policy
- [ ] Information Technology Security
- [ ] Library
- [ ] Mailroom
- [ ] Multimedia Services
- [ ] Network Infrastructure and Services
- [ ] Operations, Data Center
- [ ] Print / Copier Services
- [ ] Research Computing
- [ ] Student Computing
- [ ] Technology R&D, Advanced Technology
- [ ] Telephony
- [ ] Web Support Services

Other

4. Is the highest ranking information technology administrator / officer a member of your president's or chancellor's cabinet?

- ( ) Yes
- ( ) No

5. Please enter the number of full-time equivalent (FTE) staff (including clerical, support, and management staff) and students employed by the centralized IT organization of your campus in each of the functional areas listed below for FY 2006-2007. Please include part-time, temporary, and limited-term employees in your count. Please do *not* include employees who supported a hospital or who supported IT for other campuses if your campus is part of a multicampus system or district.

If your campus has contracted with an external supplier to provide all or nearly all IT services through an outsource arrangement, please include the supplier's employees as staff for the purposes of this question and check the box below the table to report this outsourcing arrangement. If your campus has merged the library and IT organizations, please see the glossary term Library / IT Staff for directions.

If you had no employees in a functional area, enter 0. If you had less than 1 FTE in an area, use a decimal number rather than a fraction to indicate what portion of an FTE employee supported that area. NOTE that the total of the numbers that you enter in each of these columns should be equal to the total number of FTE staff and students employed by your centralized IT organization for FY 2006-2007. Please use "other" to enter the number of FTE staff and/or students who do not fit into any of the functional areas listed and describe the functions these employees support in the box provided. Please do not use the "other function" line to report that you do not have other functions or that you have 0 other staff. If you have no other functional areas and no other staff, leave the boxes for line 14 blank.

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 FTE 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 FTE	Student FTE
1. Administration of IT Organization, IT Planning, Technology R&D		
2. Administrative / Enterprise Information Systems		
3. Desktop Computing, User Support Services, Training, Computer Store		
4. Enterprise Infrastructure and Services, Identity Management		
5. Help Desk		
6. Information Technology Policy		
7. Information Technology Security		
8. Instructional Technology, Multimedia Services, Student Computing		
9. Network Infrastructure and Services		
10. Operations, Data Center, Print/Copier Services, Mailroom		
11. Research Computing, Academic Computing		
12. Telephony		
13. Web Support Services		
14. Other Function		
Total centralized IT unit FTE:		

☐ Please check this box if all or nearly all of your IT staff are provided through an outsourcing arrangement with an external supplier (other than your system or district office if your campus is part of a multicampus system or district).

☐ Please check this box if your campus is part of a multicampus system or district that provided staffing support from the centralized system or district office that is not reflected in the numbers you have entered above.

6. Please **estimate** the number of full-time equivalent (FTE) information technology personnel who were employed by departments or offices **outside the centralized IT organization** of your campus for FY 2006-2007 (for example, employed by administrative offices or academic departments), including part-time, temporary, and limited term employees. Your campus HR office may be able to provide this number. If no IT personnel were employed outside the centralized IT organization, enter 0. If you cannot estimate this number, please check the box below to report that.

_____ FTE

☐ We are unable to estimate this number.

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

○ Yes

○ No

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

○ Yes

○ No

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

Does your campus strategic plan include strategies and directions for information technology?

- ○ Yes
- ○ No

Does your campus have a stand-alone information technology strategic plan?

- ○ Yes
- ○ No

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

- ☐ Trustee committee
- ☐ President's cabinet / council
- ☐ Administrative committee
- ☐ Academic committee / faculty senate
- ☐ Technology advisory committee
- ☐ Student committee
- ☐ State agency
- ☐ System or district office in multicampus system or district

Other

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

IT Financing and Management

1. Please enter the dollar amounts your centralized information technology organization received in FY 2006-2007 from each of the funding categories listed.

If you had no funding in a category, enter 0. Enter the dollar amount in whole U.S. Dollars without commas or decimals, e.g., $588,499.41 would be entered as 588499. NOTE that the total of all of the dollars entered should represent the total funding your centralized IT organization received in FY 2006-2007. Click on the underlined terms for an explanation of what these funding sources are meant to include. If you had a category of funding not listed, please describe it in the "other" category and enter the dollar amount received from that source. Please do not use the "other funding" category to report 0 other funding; if you have no other funding sources, simply leave both of the boxes on line 10 blank.

NOTE that we are asking campuses in a multicampus system or district to enter a best estimate of their share of the dollar equivalent for systems or services that were provided at no charge by the central system or district office to its campuses. We urge you to contact your system or district office for help in calculating this estimate. For examples of these calculations, click here. EDUCAUSE has contacted system and district offices to alert them that their campuses may be in touch with them for help with this data point. Note also that you should not report an amount that your campus actually paid to your system or district office for systems or services provided, as those dollars are assumed to be included in the expenditures from your centralized IT organization's operating appropriation. If, however, you have not included those dollars on line 1, you may enter them on line 8.

Please note also that line 9 allows you to report separately the amount of compensation and/or benefits for centralized IT staff that might have been paid from an institutional budget rather than included in your centralized IT organization's operating appropriation / budget. If you enter an amount here, please be sure to also report this amount on line 1a of Section 2 Question 4 of the survey.

Category of Funding	Dollar Amount
1. Operating appropriation to centralized IT organization	$
2. Capital appropriation to the centralized IT organization (other than those amortized through rates)	$
3. Appropriation to the centralized IT organization from revenue generated from student technology fees (if not included above in line 1, operating appropriation)	$
4. Revenue from sale (chargeback) of centralized services (e.g., network or phone services, computer repairs) to campus departments, students, staff, and others	$
5. Revenue from sale of centralized services (e.g., computer store sales) to entities external to the campus	$
6. Net revenue from resale of products (e.g., computer store sales) to campus departments, students, staff, and others	$
7. Net revenue from resale of products (e.g., computer store sales) to entities external to the campus	$
8. If your campus is part of a multicampus system or district, enter your best estimate for your campus's proportional share of the dollar equivalent for systems or services provided at the system or district level for which the campus is not charged.	$
9. If compensation or fringe benefits for centralized IT staff were paid from an institutional budget (that is, not included in your centralized IT organization's funding or budget), please enter the amount here (if you have not already accounted for this equivalent funding in line 1 above).	$
10. Other Funding	$
Total centralized IT Funding for FY 2006-2007:	

2. Please **estimate** what percent of funding for each centralized IT function came from these various funding sources for FY 2006-2007.

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.

NOTE that we are requesting that you estimate what percent of equivalent funding came from the system/district office for each function if your campus is part of a multicampus system that provides IT functionality at the system/district level.

Centralized Campus IT Function	Appropriation from Campus Operating Budget	Appropriation from Campus Capital Budget	Student Tech Fee	Cost Recovery (Chargeback)	Provided at the System / District Level	Other Sources	Total
1. Administration of IT Organization, IT Planning, Technology R&D	%	%	%	%	%	%	
2. Administrative / Enterprise Information Systems	%	%	%	%	%	%	
3. Desktop Computing, User Support Services, Training, Computer Store	%	%	%	%	%	%	
4. Enterprise Infrastructure and Services, Identity Management	%	%	%	%	%	%	
5. Help Desk	%	%	%	%	%	%	
6. Information Technology Policy	%	%	%	%	%	%	
7. Information Technology Security	%	%	%	%	%	%	
8. Instructional Technology, Multimedia Services, Student Computing	%	%	%	%	%	%	

9. Network Infrastructure and Services	%	%	%	%	%	%	%	%	%	%
10. Operations, Data Center, Print / Copier Services, Mailroom	%	%	%	%	%	%	%	%	%	%
11. Research Computing, Academic Computing	%	%	%	%	%	%	%	%	%	%
12. Telephony	%	%	%	%	%	%	%	%	%	%
13. Web Support Services	%	%	%	%	%	%	%	%	%	%
14. Other Function	%	%	%	%	%	%	%	%	%	%

3. What dollar amount, if any, does the centralized IT organization of your campus annually budget **per IT staff member** (on average) for training or professional development?

Enter the dollar amount in whole U.S. Dollars, without commas or decimals, e.g., $1,250.78 would be entered as 1251. Enter 0 if you do not allocate funds for this purpose.

NOTE that this question does not refer specifically to the past fiscal year, but is a request for the average amount per IT staff member that is usually budgeted annually. **Please be sure that the amount you enter is per IT staff member, not your entire organizational training / professional development budget.**

$

4. What was the total compensation for FY 2006-2007 (including fringe benefits even if benefits were paid elsewhere on campus and not charged to the centralized IT organization) for the following categories of personnel employed by or through the centralized IT organization of your campus? If for question 5 of section 1 of this survey you counted as "staff" individuals employed through an IT service outsource arrangement, please enter compensation for those individuals in the "staff" rather than "contractors" category below. If you reported FTE student employees, there is an expectation that you will enter congruent compensation for this category. If you enter $0 because you did not compensate your student employees from centralized IT funding, or if the compensation amount entered was subsidized by work study or other funding external to your IT organization, please check the appropriate box below the question to indicate this arrangement.

Note the ability to report an amount for compensation and/or benefits for centralized IT staff that was paid from an institutional budget rather than from your centralized IT organization's operating appropriation / budget. Please note that if you include such an amount on line 1 it should NOT also be reported on line 1a. If you enter an amount on line 1a, please be sure that you have also reported this amount on line 9 of Section 2 Question 1 of the survey.

Enter the dollar amount in whole U.S. Dollars, without commas or decimals, e.g., $58,499.41 would be entered as 58499. NOTE that the total of all the numbers entered should reflect the total compensation expended for all centralized IT personnel for FY 2006-07. If your centralized IT organization compensated personnel that did not fall into any of the categories listed, please include this information in the "other" category and enter the dollar amount of total compensation for these personnel. **Please do not use the "other" category to report $0 for no other kinds of staff compensation;** if you had no other kind of staff compensation, simply leave both of the boxes on that line blank. Click on the underlined term for an explanation of that category of personnel.

1. Staff	$
1a. If staff compensation and/or fringe benefits were paid from an institutional budget rather than from your centralized IT funding / budget, and you have reported those dollars on line 9 of Section 2 Question 1, please enter the amount here.	$
2. Students*	$
3. Consultants	$
4. Contractors	$
5. Other	$

☐ *Please check here if your student employees were compensated in whole or part by Work Study or other funding that you did not report as part of your centralized IT organization's funding in Section 2, Question 1 or that you did not include in line 2 above.

☐ Please check this box if all or nearly all of your IT staff were provided through an outsourcing arrangement with an external supplier (other than your system or district office if your campus is part of a multicampus system or district).

Total centralized IT Personnel Compensation for FY 2006-2007:

5. Please enter your best **estimate** of the total spent on salaries (including benefits) for FY 2006-2007 for IT personnel who are employed in departments or offices **outside the centralized IT organization** of your campus (for example, employed by administrative offices or academic departments), including part-time and limited-term employees.

Enter the dollar amount in whole U.S. Dollars, without commas or decimals. Your campus HR office may be able to provide this figure. If no IT personnel were employed outside the centralized IT organization, enter 0. If you cannot estimate this amount, please check the box to indicate that.

$ [ ]

☐ We cannot estimate this amount.

6. Please enter your best **estimate** of the total spent in FY 2006-2007 on information technology (other than salaries and benefits) in departments or offices outside the centralized IT organization of your campus.

These expenditures would include hardware, software, licenses, and so forth, that is, non-personnel expenditures. 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 whole U.S. Dollars without commas or decimals. If your campus has no IT expenditures (other than salaries and benefits) outside the centralized IT organization, enter 0. If you cannot estimate this amount, please check the box to indicate that.

$ [ ]

☐ We cannot reasonably estimate this amount.

7. In FY 2006-2007, did your campus charge a general student technology fee, that is, a fee designated wholly for IT that is levied on all students, regardless of major or school (as opposed to specific, individual technology fees that might have been charged based on academic major or other criteria)?

○ Yes

○ No

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

On what basis is the fee charged and what is the amount of the fee per FTE student? (Select only one and enter the amount in U.S. dollars. NOTE that decimals are permitted here.)

Basis for charge:	**Amount of fee:**
○ Flat fee per year	$ [ ]
○ Flat fee per semester	$ [ ]
○ Flat fee per quarter	$ [ ]
○ Flat fee per credit hour	$ [ ]
○ Percentage of tuition	[ ] %
○ Other [ ]	[ ]

What were the total dollars generated by this fee for FY 2005-2006? (Enter amount in whole U.S. dollars without commas or decimals.)

$ [ ]

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

- [ ] Students
- [ ] IT administration
- [ ] Campus committee
- [ ] Senior administration
- [ ] State agency
- [ ] System or district office in a multicampus system or district
- [ ] 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

9. **Estimate** how many computers your campus owns or leases. (Enter a whole number.)

[ ] computers

10. What is the planned replacement cycle for the computers owned or leased by your campus?

- ( ) Less than every three years
- ( ) Three years
- ( ) Between three and four years
- ( ) Four years
- ( ) More than every four years
- ( ) We have different replacement cycles for different types of computers.
- ( ) We have no formal replacement plan.

11. What percent of the computers owned or leased by your campus are on a replacement cycle for which dollars are 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 were replaced in FY 2006-2007? (Enter percentages as whole numbers, e.g., 70% would be entered as 70. NOTE that replacement refers to replacing with new computers rather than repurposing machines.)

[ ] %

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 internal information technology services are covered by written service level agreements between the centralized IT organization and departments. (Check all that apply.)

- [ ] Academic and/or research support
- [ ] Administrative / enterprise information systems support
- [ ] Computer and network security
- [ ] Data center services
- [ ] Desktop services / user support services / help desk
- [ ] Instructional technology support
- [ ] Multimedia services
- [ ] Network services
- [ ] Print services
- [ ] Telephone services
- [ ] Training
- [ ] 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 either partially or entirely by an external supplier (that is, a non-affiliated entity such as a vendor or other organization) with whom your campus has contracted through an outsource or ASP arrangement. (NOTE that if your campus is part of a multicampus system or district, the district or system office should not be considered an external supplier.)

- [ ] Administrative system(s) — transaction systems operation (e.g., payroll, grants, admissions, etc.)
- [ ] Administrative systems — application development
- [ ] Administrative systems — project management for implementations
- [ ] All or nearly all centralized IT staff and services
- [ ] CIO / top IT administrator
- [ ] Computer and network security
- [ ] Computer operations
- [ ] Data center
- [ ] Desktop computer installation, maintenance, and/or repair services

- [ ] Distance education
- [ ] Help desk
- [ ] Instructional / course management system
- [ ] Multimedia services
- [ ] Network services on campus
- [ ] Portal
- [ ] Print services
- [ ] Remote access to network services
- [ ] Resnet (student residential networks)
- [ ] Telephone services
- [ ] User support services
- [ ] Web development and/or hosting

Other

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

16. Enter in the box below the total number of *headcount employees* (including faculty) that your campus last reported to IPEDS. Your Institutional Research Office should be able to provide you with this number.

NOTE that this question is included in the EDUCAUSE Core Data Service survey by an agreement with the leaders of the COSTS Project, whose survey was merged with the CDS survey in 2006. Any campus that has participated in the COSTS Project and any campus that is a member of the Consortium of Liberal Arts Colleges (CLAC) will need to complete this question in order for benchmarks that have been available through the COSTS Project to continue to be available through the CDS interactive database service.

This question is optional for other survey respondents, so you may elect not to provide this information. If that is the case, please check the box below to indicate this. **NOTE** that if you do provide this number, your data will be included in the related benchmark ratios that will be available in the CDS interactive database service when it is launched in the spring of 2008.

- [ ] We have elected not to provide this number.

17. Enter in the box below *total campus expenses* (not including financial aid expenses) last reported to IPEDS. Enter a whole number, without commas or decimals, in U.S. dollars. This number comes from the audited financial statement for your institution and should be available from your campus business office.

NOTE that this question is included in the EDUCAUSE Core Data Service survey by an agreement with the leaders of the COSTS Project, whose survey was merged with the CDS survey in 2006. Any campus that has participated in the COSTS Project and any campus that is a member of the Consortium of Liberal Arts Colleges (CLAC) will need to complete this question in order for benchmarks that have been available through the COSTS Project to continue to be available through the CDS interactive database service.

This question is optional for other survey respondents, so you may elect not to provide this information. If that is the case, please check the box below to indicate this. **NOTE** that if you do provide this number, your data will be included in the related benchmark ratios that will be available in the CDS interactive database service when it is launched in the spring of 2008.

$

- [ ] We have elected not to provide this number.

If you have elected to provide total campus expenses (net financial aid) in the box above, please check below which accounting standards are followed by your campus. Again, your business office should be able to provide this information.

- ( ) GASB (Governmental Accounting Standards Board)
- ( ) FASB (Financial Accounting Standards Board)

Faculty and Student Computing

1. How many hours a week does the public help desk service provided by your centralized IT organization 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. NOTE that this number cannot exceed 168.)

_____ hours

☐ We do not have a public help desk.

2. **Estimate** what percent of undergraduate students at your institution use their own personal computers on campus. (NOTE that this includes students using computers they already owned before enrolling that they brought with them or using computers that your campus has provided or leased to them or required them to purchase after enrollment. **If your campus does not have resident students, please do not include computers that students use at home for which your staff are not responsible for support.** Enter the 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 a personal computer.
- ○ Students in some departments or majors are required to purchase/lease a personal computer.
- ○ 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 computer purchase or lease.
- ○ Other _____

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 prevalent speed offered?

- ○ 10 mbps
- ○ 10-11 mbps
- ○ 10/100 mbps
- ○ 100 mbps
- ○ > 100 mbps

What is the most prevalent technology? (Select only one.)

- Ethernet
- Cable Modem
- DSL
- Wireless
- Other

5. Please select the statement below that best describes your campus with regard to providing students a campus-negotiated service to access online music and/or movie services.

- We are already offering such a service.
- We are planning to offer such a service.
- We are considering offering such a service.
- We have no plans to offer such a service.

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

- Yes
- No

7. 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.

8. 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 provide student technology assistants who help faculty use technology.
- [ ] 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.).
- [ ] We offer special grants or awards to faculty to support innovative use of technology in teaching and learning.

Other

If you checked either one or both of the first two options above, please estimate what percent of the faculty are using the center(s). Enter the estimate as a whole number without a percent sign.

%

9. Please check the one statement that most accurately describes your campus's 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 are currently reviewing options, considering deploying a course management system or changing our current course management system approach.
- 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 support a single open source course management system or a commercial product based on open source.
- We support more than one open source course management system or commercial product based on open source.
- We employ a hybrid approach (support a combination of homegrown, open source, and/or commercial course management systems).
- Other

If you checked that you currently support one or more course management systems, please select the statement that most accurately describes faculty use of the system(s) at your campus:

- Our course management system(s) is (are) ubiquitous, employed for all or nearly all courses.
- Our course management system(s) is (are) used selectively by faculty.

10. Please indicate the status at your campus of the following learning technologies or practices, whether at the campus or individual departmental level.

Technology or Practice	Deployed	Experimenting with	Considering	Not planned
Blogs				
E-learning				
E-portfolios				
Hybrid courses				
Information literacy requirement				
Interactive learning				
Learning objects				
Wikis				

11. 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	%
Smart boards	%
Document projectors / systems / cameras	%
Clickers (personal response systems)	%
Other technology	%

Networking 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
Mbps (megabits per second)

...to high-performance networks such as Abilene
Mbps (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 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., P2P file sharing).
- We shape by direction (inbound versus outbound).

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						
Virtual Private Network (VPN)						

Regional academic network	☐	☐	☐	☐	☐	
Other	☐	☐	☐	☐	☐	

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

Area	Not Applicable	0%	1-25%	26-50%	51-75%	76-100%	
Classrooms	○	○	○	○	○	○	
Public Labs	○	○	○	○	○	○	
Library	○	○	○	○	○	○	
Residence Halls	○	○	○	○	○	○	
Student Union	○	○	○	○	○	○	
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? (NOTE that this question relates to designated sites that are set up with permanent equipment for conducting interactive videoconferencing. Enter a whole number. If you have no such sites, enter 0.)

sites

6. **Estimate** the percentage of personal computers owned or leased by your campus that can deploy videoconferencing from the desktop. Enter the percentage as a whole number, e.g., 20% would be entered as 20. If you have no desktop computers with this capability, enter 0.

%

7. Please indicate the status at your campus of the following technologies, whether campuswide or in individual departments.

Technology	Deployed	Piloting	In progress	Considering	Not planned
Antispam tools	○	○	○	○	○
Antispyware software	○	○	○	○	○
Antivirus software	○	○	○	○	○
IPTV	○	○	○	○	○
Personal firewall software	○	○	○	○	○
Video over IP	○	○	○	○	○
Voice over IP	○	○	○	○	○
Web Services	○	○	○	○	○
Wireless security technologies	○	○	○	○	○
Emergency notification system					

8. Please indicate the status at your campus of the following identity management technologies.

Technology	Deployed	Piloting	In progress	Considering	Not planned
Biometrics	○	○	○	○	○
Electronic signatures	○	○	○	○	○
Enterprise directory	○	○	○	○	○
PKI	○	○	○	○	○
Smart cards	○	○	○	○	○
Tokens	○	○	○	○	○
Two-factor authentication	○	○	○	○	○

9. Please check the statement that most accurately describes the status of end-user authentication for network (wired and wireless) access on your campus.

- ○ We currently require end-user authentication for all network access.
- ○ We are in the process of implementing an end-user authentication requirement for all network access.
- ○ We are planning to require end-user authentication for all network access.
- ○ We are considering an end-user authentication requirement for all network access.
- ○ We have no plans for requiring end-user authentication for all network access.
- ○ Other

10. 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 site license for a personal firewall product
- ☐ a plan in place to implement one or more firewalls
- ☐ no firewalls

Other

11. Please check all of the following that apply at your campus regarding security-related practices.

- ☐ We require all of our critical systems to be expeditiously patched or updated.
- ☐ We require campus-owned or -leased computers to be expeditiously patched or updated.
- ☐ We require all personally owned computers to be expeditiously patched or updated.
- ☐ 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.
- [ ] We conduct proactive scans to detect known security exposures in all personally owned computers connected to our network.
- [ ] Our security system includes an intrusion detection system.

Other

12. Has your campus undertaken an IT security risk assessment?

- ( ) Yes
- ( ) No

Information Systems

1. Please complete the following grid regarding the major information systems at your campus.

For campuses within multicampus systems or districts, if an information system is or soon will be provided at the system or district level, please enter the information requested for your campus but also check "provided at system or district level" for that system. If you have not implemented or do not plan to implement a specified system, please check "Not Applicable" for that system and do not check any other boxes for that system. If your campus (or system/district office on behalf of your campus) plans to implement a system in the next three years, check the box for that option. If the system is or will be a commercial product, please enter the name(s) of the vendor(s) and product(s); if open source, please enter "open source" and the product name(s); if developed in house, please enter "homegrown." NOTE that you cannot enter a year in the future for the "year implemented." If the system is in the process of being implemented, enter the year in which the implementation was begun.

System	**Not Applicable**	**Year Implemented** (yyyy)	**Enter Vendor and Product Name, Open Source and Product Name, and/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 or 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 with customization

- [ ] Use an open source product, with or without customization
- [ ] Buy best-of-breed applications
- [ ] Buy a package of integrated systems
- [ ] Enhance legacy systems and provide Web interfaces
- [ ] Outsource administrative systems

Other _____

3. Do you modify commercial or open source products that you implement?

- ( ) Yes
- ( ) No

If you answered yes, please indicate the usual extent of modification. (Check all that apply.)

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

Other _____

4. Please check the appropriate statement for your campus (or system or 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.

If you selected one of the last three choices above...

Please **estimate** the percent of the total cost of the project that was or will be spent on the following ERP project components at the time of implementation. (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 _____	_____ %

5. Please check the one statement that is most appropriate regarding a Web portal at your campus (or system or 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 answer the following five questions...

Our portal is or will be:

- ○ developed in-house
- ○ a commercial product
- ○ an open source product
- ○ Other

Is your portal (or will your portal be) customizable by the individual user?

- ○ Yes
- ○ No

Is your portal (or will your portal be) customized for target audiences?

- ○ Yes
- ○ No

For what audience is your portal (or will your portal be) customized? (Check all that apply.)

- ☐ for current students
- ☐ for prospective students
- ☐ for faculty
- ☐ for staff
- ☐ for the external community
- ☐ for alumni

Other

Is your portal (or will your portal be) integrated with campus administrative systems?

- ○ Yes
- ○ No

APPENDIX D

Glossary of Terms from the 2007 Core Data Survey

Administration of IT Organization, IT Planning, Technology R&D

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

- Financial planning and management for IT
- Campus IT planning
- IT communications and publications
- Human resource management for the IT organization
- Facilities management for the IT organization
- Advanced technology, technology R&D
- Staff who support these functions (administrative and clerical)
- CIO or CTO position

Administrative/Enterprise Information Systems

Administrative/enterprise information systems include legacy administrative systems or enterprise resource planning (ERP) systems such as student administration (admissions, financial aid, registration, etc.), financial information systems, procurement systems, human resource systems, payroll, research administration (grants and contracts), and library systems (if supported by the IT organization). For the purpose of our survey, please include the following in this area if applicable:

- Development and implementation of these systems
- Maintenance of these systems
- Training of users of these systems
- Programming support related to these systems
- Database/data administration
- Hardware, software, staff, and other infrastructure needed to support these systems

Biometrics

In computer security, biometrics refers to authentication techniques that rely on measurable physical characteristics that can be automatically checked. Examples include retinal scans, computer analysis of fingerprints or speech, or other physiological means of user identification for security purposes.

Blogs

Refers to web logs that are analogous to personal online diaries in which individuals share their observations and opinions.

Broadband

In the human resources context, 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.

Calculating the Estimate of Dollar Equivalent for Systems and Services

There is no one formula for calculating the dollar equivalent of systems and services provided at no direct charge to its campuses by the central office in a multicampus system or district. One simple, straightforward methodology might

be to estimate the system or district office's total cost in providing system-wide or district-wide IT systems and services, then allocate an estimated cost for each campus in the system or district based on campus FTE or other means of estimating usage. EDUCAUSE has set up a website providing examples from system offices that worked with their campuses to provide estimates for the 2007 core data survey. See http://net.educause.edu/coredata/s2q1_calculation.asp.

Capital Appropriation

Refers to appropriation to the central IT organization from the campus capital budget to fund major purchases and implementations such as networks, ERP systems, and buildings. Does not include capital appropriations 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.

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 employees with whom the institution contracts to provide IT infrastructure and/or specific IT services that might otherwise be delivered by in-house IT staff. For the purposes of our survey, consultants are not to be included in the "contractors" category. If your campus outsources all or nearly all IT services and the outsourcer provides staff on site, please count these employees as staff as opposed to contractors.

Desktop Computing Support, User Support Services, Training, Computer Store

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

- Desktop computer technical analysis and consulting staff
- Computer resale activities and staff
- Computer installation, maintenance, and repair
- Technicians and technical support for desktop computing
- Computer repair staff
- Support for knowledge bases, self-help tools
- General user training and education and related staff
- User documentation and general informational publications and related staff
- Infrastructure support for departmental IT support providers
- User support staff (other than help desk staff)
- Reference desk and staff (if you wish to distribute library/IT staff in a merged organization)

E-Portfolios

An e-portfolio is a digitized collection of artifacts used to document accomplishments of an individual or institution. The collection may contain text-based, graphic, or multimedia elements archived on a website or on other electronic media such as a CD-ROM or DVD. E-portfolios can be used as a tool in student advising, to document learning outcomes and institutional quality for accreditation, or to demonstrate accomplishments for career searches.

E-Learning

Refers to learning content or interaction that is facilitated electronically, such as delivery of digital content or use of threaded online discussion.

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 resource (payroll/personnel) systems, as well as warehouse and planning tools.

Electronic Signatures

Refers to data appended to a message or document that authenticates the identity of the message sender or document signer to ensure that the message or document content has not been changed in the transmission process.

Enterprise Directory

Refers to a database where different types of identifiers are correlated to support identity management, authentication, authorization, and other services.

Enterprise Infrastructure and Services, Identity Management

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

- Portal development and support
- Middleware development and support
- Security infrastructure development and support
- Service-oriented architecture (web services) development and support
- Identity management
- E-mail
- Staff, hardware, and software to support enterprise infrastructure

External Modules

Refers to modules that are not part of the core application suite, that is, a module that you create or purchase that allows you more functionality than the core application.

FTE

Refers to full-time-equivalent personnel, not number of individuals employed. For the purposes of our survey, please calculate FTE based on a 40-hour work week over the course of the full fiscal year (or approximately 2,000 hours per year). For student FTE, a simple formula for calculating total FTE might be to take the number of students employed times the number of hours per week they work times the number of weeks a year they work and divide that total by 2,000. The total FTE number derived can then be distributed across the 13 functional areas listed in question 5 of section 1.

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.

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
- Call centers
- Support for knowledge bases, self-help tools
- Specialized support centers
- Help desk staff

Hybrid Course

Refers to a course in which part of the course is delivered online and part is delivered in face-to-face class meetings. Hybrid courses typically reduce the number of days of face-to-face class meetings (for example, from three to two meetings).

IPEDS

The Integrated Postsecondary Education Data Systems (IPEDS) is a single, comprehensive, data-collection program designed to capture data for the National Center for Education Statistics (NCES) for all U.S. 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. IPEDS data reporting requires the extensive effort of a variety of offices on any campus, and this is the "official" information the college or university stands behind, used by the federal government.

IPTV (Internet Protocol Television)

Refers to a system where a digital television service is delivered to subscribing consumers using the Internet Protocol over a broadband connection.

Information Literacy Requirement

Refers to a requirement to prove the student knows how to find relevant information resources online but also can evaluate the quality of the resource and use technology appropriately for search, categorization, retrieval, and analysis, as well as understand the ethics associated with the use of intellectual property.

Information Technology 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

Information Technology 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 administration staff

Instructional Technology, Multimedia Services, Student Computing

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 purchased)
- Specialized training and support for faculty
- Specialized training and support for students
- Instructional support staff (including technologists and designers)
- Multimedia services (support for audio, video, graphics, and so forth)
- TV, broadcasting
- Public student lab support
- Teaching and technology center staff

Interactive Learning

Refers to learning environments that involve interaction between the student and (a) faculty, (b) other students, or (c) resources. Interactive learning can involve Q&A, simulations, games, role-playing, experimentation, and so forth.

Learning Objects

Refers to reusable digital learning material, such as a simulation, data set, or glossary. Learning objects include metadata, which allows them to be categorized and searched.

Library/IT Staff

If your campus IT organization has merged with the campus library, please include in your staff count only the library FTE personnel who perform IT-related functions. Do not include library FTE who support traditional library functions that do not relate to technology. You may distribute your library/IT FTE among the 13 functional areas listed or you may enter the total FTE for this category of staff in the "other" category and describe them as "library/IT staff." If your IT organization has not merged with the library but you have staff supporting library systems, please include these staff in your count for Administrative/Enterprise Information Systems.

Net Revenue

Refers to revenue remaining after accounting for expenditures for products and the cost of doing business.

Network Infrastructure and 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
- Staff, hardware, and software for network infrastructure

Operating Appropriation

Refers to the allocation to the central IT organization from the campus operating budget that is generally used to cover all noncapital IT operations costs such as staff compensation and benefits, operating expenses, equipment (including maintenance and repair), software licenses, and so forth.

Operations, Data Center, Print/Copier Services, Mailroom

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
- Print services
- Copier services
- Mail room services
- Staff, hardware, and software affiliated with these functions

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 website that other websites use for accepting payment by credit card as part of their online ordering systems.

PKI

Public key infrastructure (PKI) 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 website 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.

Research Computing, Academic 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 and software that does not relate to instruction
- Discipline-specific applications development, programming, and support not related to instruction
- General statistical support

Shaping

"Shaping" bandwidth utilization 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.

Staff

Refers to all staff employed by the central IT organization, including clerical, technical, and management staff and limited-term or temporary employees who were employed for fiscal year 2006–2007. For the purposes of our survey, if your campus contracted with a vendor or external organization to provide all or nearly all IT services during that period, including all IT staff on site, please count the employees of the outsourcer as staff rather than contractors. If your IT organization has merged with the library, please include in your staff count only the library FTE personnel who perform IT-related functions (see Library/IT Staff).

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.

Token

Refers to a small physical device used to authenticate the holder to a computer system or network. Tokens can hold cryptographic keys or provide one-time passwords. Tokens typically require a user-entered PIN and therefore can directly implement two-factor authentication.

Two-Factor Authentication

Refers to any authentication protocol that requires two forms of authentication to access a system. This contrasts with traditional password authentication, which requires only one factor (knowledge of a password) in order to gain access to a system. Three standard kinds of authentication factors are recognized: something you know (such as a password or PIN), something you have (such as a credit card or a hardware token), or something you are (such as a fingerprint, a retinal pattern, or other biometrics).

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:

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

Wiki

Refers to an editable web page that can be edited by anyone with access to the wiki.

Wireless Security Technologies

Refers to technologies used to prevent unauthorized access, ensure the confidentiality of data, and detect misuse of wireless networks.

APPENDIX E

Carnegie Classification Definitions

In 1970, the Carnegie Commission on Higher Education developed a classification of colleges and universities to support its program of research and policy analysis. Derived from empirical data on colleges and universities, the "Carnegie Classification" was published for use by other researchers in 1973 and subsequently updated in 1976, 1987, 1994, 2000, and 2005. With the 2005 revision, the single classification system was replaced by a set of multiple, parallel classifications. The original classification framework—now called the basic classification—has also been substantially revised (see http://www.carnegiefoundation.org/classifications/index.asp).

This CDS summary report uses the basic classification system from 2000 (described below) for the sake of simplicity. The 2000 Carnegie Classification included 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.

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 10 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 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.

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