

2004 Enterprise Systems Salary Survey

June, 2004

Sponsored by
Enterprise Strategies (esj.com)
Lumigent Technologies

Table of Contents

Part 1: Salaries Stagnant for ITStaff.....	page 1
Part 2: IT Middle Managers Feel the Pain.....	page 10
Part 3: IT Follows Bicoastal Economy.....	page 19
Part 4: IT Attitudes and Demographics.....	page 24
APPENDIX: Job Descriptions.....	page 27

Part 1: Salaries Stagnant For IT Staff

Salaries and bonuses for IT pros have stabilized or are growing slightly. In one position, they actually declined.

Joe McKendrick

Salaries and bonuses for IT pros have stabilized or are growing slightly since we surveyed IT professionals two years ago. In one position, compensation actually declined.

In this first of a four-part series on IT salaries, we look at how IT staff — from programmers to systems administrators — are compensated. We examine salary differentials based on skill and experience level, and see where the bright spots are.

The good times may not be ready to roll again just quite yet, but at least salaries and bonuses for IT professionals appear to have stabilized, and even show some signs of slowly creeping upward. The past few years were tough on IT hiring and career advancement, but there were modest gains for most IT staff positions across the salary scale. For the most part — unlike the go-go days of the late 1990s — increases are in line with most other professions, averaging two to four percent. However, there are some hot growth spots for IT salaries, particularly in Unix environments, as well as in business-to-business and supply chain management applications.

These are the findings of a recent salary survey of 1,130 enterprise IT sites conducted by Enterprise Systems. The latest salary survey tracked salary figures for IT managers and professionals across a broad spectrum of organizations. Along with a range of management positions (see Part 2), our survey covered seven IT line positions, including applications systems analysts, programmer/analysts, application programmers, system programmers, network administrators, system administrators, and database administrators.

A majority of respondents (78 percent) support Windows Server 2003, 2000, or NT server systems within their companies. Close to half of the survey participants (43 percent) report having mainframe systems,

while 42 percent support Unix. Another 29 percent run IBM i5 (formerly known as iSeries or AS/400) systems, and 24 percent have Linux.

When it comes to IT staff pay, some IT organizations have been running so tight that they squeak. "We've had a pay freeze for three years running and no bonuses," said one respondent, a capacity and performance analyst with a Canadian information technology services firm. Another respondent laments: "We've had no raises at all in several years regardless of high marks at evaluation time. Some respondents report salary declines as high as 20 percent over the past three years. Still other respondents report that many new opportunities have gone to outsourcing firms, while internal IT salaries have remained flat.

Survey respondents observe that salary gains tended to go to select groups. "Lesser-educated or -skilled employees have had their salaries reduced," said a systems/business analyst from a large Midwestern utility. "Better-educated and -skilled employees have not seen significant salary increases for about three years."

"Specialists are out, generalists are in," said another respondent, network manager with a financial services firm. "Those with diverse experience are commanding the highest salaries."

Note: N/A in the tables below indicates "not available" — the question was not asked in our 2001 survey.

Systems Analysts

Application systems analysts working in mainframe and Unix shops earn the highest salaries for this position, our survey finds. Systems analysts, who typically work with corporate management, end users, and clients to plan and design systems, saw annual base salaries grow fairly conservatively, however. Currently, these IT professionals earn about \$70,900, compared to \$66,500 in the previous Enterprise Systems salary survey conducted in 2002. This translates into an increase of close to seven percent over a two-year period.

Across the board, system analysts are projected to earn bonuses of about \$4,200 on top of their base salaries for this year — the highest bonus for any of the IT line positions measured in this survey.

The typical systems analyst in our survey has about 10 years of industry experience. On average, seasoned system analysts with 10 or more years experience make up to 27 percent more than their less-experienced or entry-level counterparts. Systems analysts working with business-to-business infrastructures fare best (\$75,500), followed closely by supply chain management systems (\$75,400).

By operating system environment, systems analysts in mainframe shops fare best, drawing an average salary of \$73,900 — or more than four percent above the industry average.

"People with skills in quality management and enterprise architecture development are currently our biggest growth areas," said the director of information systems for a major West Coast financial services company.

System analyst salaries are strongest within the services and software industries, averaging about \$75,000.

Systems Analyst Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$70,900	\$66,500	\$66,000	+6.6%

Average annual bonus for 2004: \$4,200

BY EXPERIENCE LEVEL

< 5 years	<10 years	10+ years	Differential
\$58,800	\$67,100	\$74,900	+27.4%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$73,900	\$68,800	\$73,000	\$68,800	\$72,200

**Non-mainframe Linux*

Programmer/Analyst

Application programmer/analysts — those who develop applications and environments — saw only a hiccup in salary growth since 2002, up about three-and-a-half percent from an average of \$61,700 to \$63,800. P/As are projected to also earn bonuses of about \$3,400 this year — or about five-and-a-half percent of their base salary.

The typical P/A in our survey has about nine years experience in the field. Long-term salary growth prospects appear good for professionals remaining in these positions, according to our survey. P/As with 10 or more years experience make 57 percent more than their less-seasoned counterparts. Along with system programmers (see below), this is the highest salary differential based on experience in the IT staff positions covered in this survey.

As with systems analysts, P/As working in companies with business-to-business and supply chain management environments saw the highest premiums, earning average base salaries of \$66,700 in each category.

By development language environment, programmer/analysts in CICS shops fare best, drawing average salaries of \$70,400, or ten percent above the overall average.

P/A salaries are strongest within the computer industry itself, averaging \$71,900 within this sector.

Programmer/Analyst Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$63,800	\$61,700	\$57,700	+3.4%

Average annual bonus for 2004: \$3,400

BY EXPERIENCE LEVEL

< 5 years	<10 years	10+ years	Differential
\$47,800	\$61,100	\$75,100	+57.1%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$70,300	\$64,800	\$66,200	\$61,000	\$58,400

**Non-mainframe Linux*

BY PROGRAMMING ENVIRONMENT

CICS	C/C++	COBOL	VB	Java	XML
\$70,400	\$65,800	\$65,400	\$61,300	\$64,200	\$65,900

Applications Programmer

Application programmers — who are typically code writers and testers — saw the largest jump in salaries across the IT staff positions covered in the survey. Programmers now average about \$53,000 — a rise of more than seven percent over the 2002 survey. Since many of these jobs tend to be entry-level, long-term career and salary growth in this category is limited, however. Application programmers that have remained in these positions for five to ten years or more only make about 20 percent more than their entry-level counterparts. The typical programmer in our survey has about six years of industry experience.

Programmers in Unix and OS/400 shops make the most, our survey finds, topping \$57,000 a year in base salary. By development language environment, programmers in CICS and C/C++ shops fare best, drawing an average salary of \$57,000 in both environments. Applications programmers working with XML also are seeing premiums in this range.

As with the previous categories, companies deploying and managing supply chain management and business-to-business systems had the most generous compensation, paying annual base salaries of \$58,600 and \$56,600 respectively.

Application programming salaries are strongest within the retail and healthcare sectors, averaging \$58,000. Across the board, programmers are projected to also earn bonuses of about \$2,400, or about four percent of their base salaries for this year.

Applications Programmer Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$53,000	\$49,400	\$49,200	+7.3%

Average annual bonus for 2004: \$2,400

BY EXPERIENCE LEVEL

< 5 years	<10 years	10+ years	Differential
\$47,100	\$51,600	\$57,200	+21.4%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$55,900	\$57,300	\$57,300	\$51,300	\$54,500

**Non-mainframe Linux*

BY PROGRAMMING ENVIRONMENT

CICS	C/C++	COBOL	VB	Java	XML
\$57,900	\$57,400	\$54,500	\$53,100	\$55,400	\$57,200

Systems Programmer

For systems programmers, mainframe skills are hot, according to our respondents. Overall, however, salary growth has lagged other categories. Systems programmers — who typically support the corporate infrastructure and networks — are earning base salaries of about \$70,400, or a 2.8 percent bump over the last survey in 2002.

Systems programmers are projected to also earn bonuses of about \$3,000, or four percent of their base salaries for this year. The typical systems programmer in our survey may see tremendous salary growth throughout his or her career. Salaries range between \$48,000 at entry level to \$75,000 for more than a decade's worth of experience.

By development language environment, systems programmers in CICS and COBOL shops fare best, drawing average salaries of \$73,000 and \$72,000, respectively. "Annual increases are steadily declining, except for mainframes," said the technical support supervisor for a large energy company. "Mainframe skills are becoming increasingly scarce, and are starting to pay premium salaries."

Another respondent echoed a similar view. "Our company flattened salaries, and eliminated bonus pools across the board. Premiums now given for adaptability, and attitude over raw skills — except for assembler language experience on mainframes."

Systems programmer salaries are strongest within the financial services and insurance sector, averaging \$80,500 annually.

Systems Programmer Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$70,400	\$68,500	N/A	+2.8%

Average annual bonus for 2004: \$3,000

BY EXPERIENCE LEVEL

< 5 years	<10 years	10+ years	Differential
\$47,800	\$61,100	\$75,100	+57.1%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$74,100	\$75,400	\$72,800	\$61,900	\$76,200

**Non-mainframe Linux*

BY PROGRAMMING ENVIRONMENT

CICS	C/C++	COBOL	VB	Java	XML
\$73,100	\$67,000	\$72,400	\$67,000	\$70,000	\$69,200

Note: N/A indicates not available — the question was not asked in our 2001 survey.

Network Administrator

Today's companies are becoming more and more networked, steadily increasing the value of professionals that make this connectivity happen. Network administrators, who monitor and troubleshoot network usage, are earning base salaries of about \$57,300 – 6.5 percent growth over the last survey in 2002.

Network administrator salaries are strongest within the utilities and healthcare sectors, averaging \$61,800 and \$60,900, respectively. In terms of annual bonuses for this year, network administrators are projected to also earn about \$2,000, or three-and-a-half percent of their base salaries. The typical network administrator in our survey has about eight years of industry experience, and seasoned network administrators are drawing salaries of up to \$63,500.

"Cisco networking, Active Directory, and Unix are all skills drawing the highest premiums," said the manager of information systems for a Midwest-based telecommunications company. By environment, our respondents reported that network administrators in Unix shops fare best, drawing average salaries of \$63,900 — 11 percent above the average for the profession.

However, much of this depends on corporate priorities. "Our highest premiums going for newer skills such as Microsoft networking," said the director of information systems for a large midwestern university.

Network Administrator Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$57,300	\$53,800	\$56,000	+6.5%

Average annual bonus for 2004: \$2,000

BY EXPERIENCE LEVEL

< 5 years	<10 years	10+ years	Differential
\$46,900	\$53,600	\$63,500	+35.4%

BY NETWORK ENVIRONMENT

Ethernet	Unix	Linux	Win 2000	Win 2003	Novell
\$58,300	\$63,900	\$63,000	\$57,000	\$58,000	\$58,000

Systems Administrator

System administrators were the only IT line position to actually see a decline in salary averages since the last survey, making this category the hardest-hit by the recent economic slump. System administrators, who deploy and maintain operating systems and servers, are earning base salaries of about \$56,000 — reflecting a decline of about 10 percent since the last survey in 2002.

Across the board, network administrators are projected to earn bonuses of about \$1,800, or three percent of their base salaries for this year — the lowest figure of the IT staff positions covered in this survey.

While systems administrators took a major hit in salary levels in recent years, there are some strong spots where these professionals are compensated above the industry average. "Storage/SAN skills hard to find and are demanding higher salaries," said a storage/SAN specialist with a major telecommunications provider. "It feels very much like the Unix sys admin shortage of the '90s." Interestingly, this demand still appears to be holding for Unix system administrators, with salaries averaging almost \$62,000 at Unix sites in the survey — 10 percent above the average.

System administrator salaries are strongest within the healthcare and services sectors, averaging \$61,800 and \$60,100, respectively. Salaries also above average for system administrators in application areas such as supply chain management systems (\$60,000) and data warehouse installations (\$59,000).

Systems Administrator Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$56,000	\$62,000	N/A	-9.7%

Average annual bonus for 2004: \$1,800

BY EXPERIENCE LEVEL

< 5 years	<10 years	10+ years	Differential
\$48,800	\$53,200	\$61,600	+26.2%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$59,600	\$50,500	\$61,900	\$54,800	\$61,200

**Non-mainframe Linux*

Note: N/A indicates not available — the question was not asked in our 2001 survey.

Database Administrator

"Good DB engineers and DBAs are the hardest to find," said the CIO of a California-based financial services firm. "Our salaries have seen three to five percent growth this year."

If this respondent's company is a bellwether, then the near-term future looks bright for DBAs. Overall, DBAs, who oversee building and usage of company databases, make more than most IT line positions, but our survey finds that they have seen little movement in terms of salaries. They currently earn base salaries of about \$71,400 — reflecting virtually no change since the last Enterprise Systems survey in 2002.

Top-rate database skills premiums are paid to those who work with Sybase and IMS environments, our survey finds. Database administrator salaries are strongest within the software and application development sector, averaging \$78,300, or about 10 percent above the industry average for DBAs. Across the board, DBAs are projected to also earn bonuses of about \$3,600, or five percent of their base salaries for this year.

The typical DBA in our survey has about 11 years of industry experience, and salary growth prospects are excellent for this profession. Our results show a 52 percent differential based on experience — from \$50,100 a year at the entry level to \$76,100 for a decade's worth of experience.

Most valuable skills are IT architect, data integration architect, and business intelligence (such as SAP Business Warehouse), reports the content management administrator for a large West Coast manufacturer. Supporting business-to-business application deployments is also a hot area for DBAs, the survey finds, drawing up to \$78,000 a year.

Database Administrator Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$71,400	\$71,500	\$66,800	-0.1%

Average annual bonus for 2004: \$3,600

BY EXPERIENCE LEVEL

< 5 years	<10 years	10+ years	Differential
\$50,100	\$66,500	\$76,100	+51.9%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$74,800	\$73,000	\$78,700	\$70,000	\$81,500

**Non-mainframe Linux*

BY DATABASE ENVIRONMENT

DB2	IMS	Oracle	SQL Server	Sybase	MySQL
\$74,200	\$76,700	\$75,000	\$70,900	\$76,700	\$71,700



You need to prove who's accessing your most important corporate information.

With Entegra™, you will.



Sarbanes-Oxley Section 404 requires tighter internal controls on your corporate data. To ensure compliance, you need an unimpeachable audit trail of who's accessing, viewing, or changing your data. Lumigent® Entegra™ is a comprehensive data auditing solution that helps you meet this requirement. So you can mitigate the risks of non-compliance and data misuse.

Find out more.

Request your free white paper, *"Audit the Data – Or Else"*, by visiting www.lumigent.com. Or call us at **1 866-LUMIGENT** (1 866-586-4436).



Part 2: IT Middle Managers Feel the Pain

Salaries and bonuses for IT executives fell on hard times in recent years. Compensation is down in half of the positions surveyed.

Joe McKendrick

The recent IT slump dampened the compensation of many IT executives, especially those in the middle. While top-level executives (CIOs and IT directors) have escaped the cost-cutting carnage, front-line IT managers saw painful pay cuts. Some IT middle managers were lucky enough to see salary growth, though increases were small.

These and other findings about IT management positions highlight the second part of our 2004 salary survey.

The recent IT slump dampened the compensation of many IT executives, especially those in the middle. Top-level executives such as CIOs and IT directors may have escaped the cost-cutting carnage, but IT managers closer to the front lines underwent painful pay cuts that still resonate in today's paychecks. The more fortunate among IT middle managers are only seeing slow salary growth.

Our salary survey tracked salary figures for IT managers and professionals across a broad spectrum of organizations. A majority of respondents (54 percent) are managers of IT departments or principals with their companies. Our survey covered eight IT management positions, including chief information officers/vice presidents, IS directors, IS managers, application development managers, data center/operations managers, networking managers, help desk/support managers, and Internet managers/directors.

Respondents also come from a wide range of company sizes and industries. About 38 percent represent larger organizations with more than 5,000 employees; 35 percent are in companies with 500 or fewer employees; while 22 percent are part of IT departments with more than 1,000 employees.

Companies are providing the highest rewards to IT executives who have the ability to build and deploy systems that integrate business-partner information. Executives engaged in supply chain management initiatives

for their organizations tend to see premiums 10 to 23 percent higher than the average salary. Those overseeing mainframe sites also have the highest salary levels.

The survey also picked up another disconcerting trend: IT executive salaries grow rapidly through the first decade of experience, but tend to top out after that point. With the exception of C-level executives, there's very little or no premium built into the base salaries of seasoned IT managers beyond two decades.

The survey also covered IT staff positions, which were covered in last week's report. Notably, most of these positions experienced at least slight gains in salary since the last Enterprise Systems salary survey was conducted in 2002. However, half of the eight management-level positions covered in this part of our report lost ground since the last survey.

Many respondents lament that they are not quite out of the woods yet in terms of IT budget cutting, a trend that often hits managers hard. "Almost everybody has taken some sort of cut in order to keep their job here," says the manager of networking for a Midwest auto dealership.

The fact that IT managers tend to draw higher salaries than line positions also made them larger targets for cost-cutting moves. "We've had

Continued on page 11

to cut a lot of higher-salary positions due to the computer-service industry shrinking and outsourced jobs," says the manager of information systems for a small Midwest-based service firm. "Higher-salary employees are under greater scrutiny," relates the network design engineer for a large midwestern utility.

However, there are many bright spots, and not necessarily based on technical prowess. "My company has been profitable throughout the downturn. Intelligence, speed, precision, and hard work are drawing the highest premiums this year," says the technical consultant for a large West Coast computer equipment manufacturer.

One area seeing increased value, cited by a number of respondents, is that of project manager. While project manager is often a formal job title, and formal certification is available, many IT management jobs also incorporate project management skills.

Note: N/A in the tables below indicates "not available" — the question was not asked in our 2001 survey.

CIO and Vice President of IT

Chief information officers or IT vice presidents, who plan the company's broad IT direction and make all final decisions, also saw tremendous growth in their annual base salaries, reflecting a bounce back from the sluggish years of 2001 to 2002. Currently, these IT executives earn about \$130,000, compared to \$110,560 in the previous Enterprise Systems salary survey conducted in 2002. This translates into an increase of close to 18 percent over a two-year period.

Across the board, CIOs are projected to earn average bonuses of about \$25,400 on top of their base salaries for this year. This is the highest percentage bonus (19.5 percent) for any of the IT management positions measured in our survey.

At this level, experience counts for a lot. On average, seasoned CIOs with more than two decades of experience make up to 65 percent more than their less-experienced counterparts. The typical CIO or IT vice president in our survey has about 19 years of industry experience. CIOs managing organizations with ERP systems fare best (\$151,100), followed by those at companies with data warehouse environments (\$144,200).

By operating system environment, CIOs in mainframe-driven organizations earn the most, drawing an average salary of \$164,300 — more than 26 percent above the industry average. Those managing organizations with OS/400 systems follow, at about \$148,900.

CIO salaries are strongest within the utilities/transportation sector, averaging about \$181,000, followed by financial services, where CIOs typically pull in about \$158,500.

CIO/VP Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$130,000	\$110,560	\$120,700	+17.6%
Average annual bonus for 2004:			\$25,400

BY EXPERIENCE LEVEL

< 10 years	<10-20 years	>20 years	Differential
\$91,000	\$122,800	\$149,800	+64.6%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$164,300	\$148,900	\$142,500	\$115,100	\$130,600

*Non-mainframe Linux

Information Systems Director

Information systems directors, as with many IT managers, saw relatively meager increases in salary growth but robust bonuses. IS directors — who plan, direct and control all day-to-day information systems functions — saw average salaries grow by three percent over the past two years, up from an average of \$92,510 to \$95,250. However, salaries are still down from the level reported in the 2001 Enterprise Systems salary — at that time, the average salary was \$99,100. IS directors are projected to also earn bonuses of about \$10,600 this year — or about 11 percent of their base salary.

The typical IS director in our survey has about 15 years experience and oversees a staff of close to 70 employees. Long-term salary growth prospects appear good for professionals remaining in these positions, survey respondents told us. IS directors with 10 to 20 years of experience have base salaries topping \$104,000 — 38 percent more than their less-seasoned counterparts. However, this is the point where salary growth tops out. IS directors who have stayed on longer than two decades typically see lower salaries. This is a phenomenon found across most IT management positions in the survey, which shows that many hit the top of their salary range by this time.

IS directors leading organizations with ERP and supply chain management environments saw the highest premiums, earning average base salaries of \$105,100 and \$104,200 respectively in each category. "We have had stagnated growth, but the highest premiums go to those IT managers who interface well with customers/clients and have excellent business and communication skills," says the IT director of a large software development firm based in the mid-Atlantic region.

"Business skills are the most in demand," echoed another respondent, the director of IS for a manufacturer based in the western United

States. "The ability to interface with the consumers of the system and be able to translate that into technical specs."

IS director salaries are strongest within the computer industry itself, averaging \$108,900 within this sector. IS directors within utility/transportation organizations followed with \$106,800.

IS Director Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$95,250	\$92,510	\$99,100	+3.0%

Average annual bonus for 2004: \$10,600

BY EXPERIENCE LEVEL

< 10 years	11-20 years	>20 years	Differential
\$75,600	\$104,000	\$95,700	+26.6%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$107,800	\$97,700	\$106,500	\$88,600	\$100,800

**Non-mainframe Linux*

Information Systems Manager

Moving down into middle management ranks, salary levels get a little shaky, reflecting the tight IT budgets that have gripped the industry in recent years. Information systems managers — men and women who plan and approve equipment and software purchases, and also plan, direct, and control all day-to-day information systems functions — now make average base salaries of about \$81,100. This reflects a decline of almost six percent since the 2002 survey.

There is still plenty of upward mobility for this level, the survey shows. Seasoned IS managers — those with at least two decades' experience — make almost 24 percent more than those newer to the position. The typical IS manager in our survey has about 13 years of industry experience.

IS managers in mainframe shops make the most, our survey finds, topping \$94,200 a year in base salary. Those executives oversee AIX and Unix environments now average \$88,400 a year.

As with the previous categories, companies deploying and managing with supply chain management and data warehouse systems had the most generous compensation, paying annual base salaries of \$90,500 and \$87,900 respectively.

IS manager salaries are strongest within the financial services and utility sectors, averaging \$92,800 and \$89,800 respectively. Across the board, IS managers are projected to also earn bonuses of about \$6,100, or about 7.5 percent of their base salaries for this year.

IS Manager Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$81,100	\$86,100	\$78,600	-5.8%

Average annual bonus for 2004: \$6,100

BY EXPERIENCE LEVEL

< 10 years	11-20 years	>20 years	Differential
\$73,300	\$83,500	\$90,800	+23.9%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$94,200	\$84,200	\$88,400	\$76,600	\$85,600

**Non-mainframe Linux*

Application Development Managers

For application development managers, salary levels fell slightly over the last two years. AD managers — employees who plan, direct, and control all day-to-day application development functions — are earning base salaries of about \$87,500, or a 2.2 percent bump over the last survey in 2002.

In many cases, bonuses have made up for some of this tepid salary growth. AD managers are projected to earn bonuses of about \$7,100, or eight percent of their base salaries for this year. The typical AD manager in our survey may only see modest salary growth throughout his or her career. Salaries range between \$83,300 at entry level to \$93,900 for more than a decade's worth of experience. Beyond 20 years, salary growth stalls altogether.

AD manager salaries are strongest within the financial services and general services sectors, averaging \$95,000 within both. Those executives leading supply chain management system environments have the highest rates, averaging about \$95,400. Those overseeing development efforts for business-to-business systems also are seeing premium salaries, averaging \$93,200.

Application Development Manager Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$87,500	\$85,600	\$79,500	+2.2%

Average annual bonus for 2004: \$7,100

BY EXPERIENCE LEVEL

< 10 years	11-20 years	>20 years	Differential
\$83,300	\$93,900	\$90,800	+9.0%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$89,800	\$92,600	\$90,000	\$87,000	\$92,300

**Non-mainframe Linux*

Data Center/Operations Manager

Managers charged with overseeing day-to-day operations of data center environments saw relatively little movement in their salaries over the past two years. Data center/operations managers are earning base salaries of about \$79,300 – a rise of only about two percent over the last survey in 2002.

Data center manager salaries are strongest within the utilities and software sectors, averaging \$85,600 and \$85,300 respectively. In terms of annual bonuses for this year, data center managers are projected to also earn an average of \$7,200, or nine percent of their base salaries. The typical data center manager in our survey has about 15 years of industry experience, and seasoned data center managers are drawing salaries of up to \$80,000.

By environment, our respondents reported that data center managers in Linux shops (with no mainframes) fare best, drawing average salaries of \$89,900 — 13 percent above the average for the profession.

Data Center/Operations Manager Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$79,300	\$77,800	N/A	+1.9%

Average annual bonus for 2004: \$7,200

BY EXPERIENCE LEVEL

< 10 years	10-20 years	>20 years	Differential
\$73,100	\$80,800	\$79,000	+8.1%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$81,500	\$72,500	\$85,600	\$77,200	\$89,900

**Non-mainframe Linux*

Note: N/A indicates not available — the question was not asked in our 2001 survey.

Networking Manager

Networking managers saw a modest decline in average salary since our 2002 survey, placing this category among the hardest-hit by the recent economic slump. These executives — who oversee the operation of the computer network — are earning base salaries of about \$70,500, reflecting a decline of about two percent since the last survey in 2002.

Across the board, networking managers are projected to earn bonuses of about \$5,700, or eight percent of their base salaries for this year.

Salary growth prospects for networking managers is strong. Salaries range between \$58,300 for newer networking managers to \$81,800 for those with more than a decade of experience — a 40 percent differential. However, average salaries fall off for managers at the job for two decades or longer, according to survey respondents.

Networking manager salaries are strongest within the software sector, averaging \$80,000. Salaries also above average for networking managers in application areas such as supply chain management systems (\$87,000) and business-to-business implementations (\$83,700). The salary premium for those executives with supply-chain management systems is more than 23 percent above the average, the highest differential by application area in the survey.

Networking Manager Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$70,500	\$71,900	N/A	-1.9%

Average annual bonus for 2004: \$5,700

BY EXPERIENCE LEVEL

< 10 years	10-20 years	>20 years	Differential
\$58,300	\$81,800	\$75,200	+29.0%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$83,600	\$74,400	\$79,300	\$64,800	\$75,500

**Non-mainframe Linux*

Note: N/A indicates not available — the question was not asked in our 2001 survey.

Help Desk/ Support Manager

Help desk/support managers — responsible for diagnosing, troubleshooting, and correcting end-user system access problems — have seen declines in salaries. They currently earn base salaries of about \$59,800 — down four-and-a-half percent since the last Enterprise Systems survey in 2002.

Help desk manager salaries are strongest within the software and application development sector, averaging \$66,300, or about 11 percent above the industry average. Across the board, help desk managers are projected to also earn bonuses of about \$3,300, or five-and-a-half percent of their base salaries for this year.

The typical help desk manager in our survey has about nine years of industry experience, and salary growth prospects are moderate for this profession. Our results show a 18 percent differential based on experience — from \$57,200 a year for less-experienced managers to \$67,500 for a decade's worth of experience.

Supporting business-to-business application deployments, as well as supply-chain management systems, is also a hot area for help desk managers, our survey finds, drawing more than \$65,000 a year.

Help Desk/Support Manager Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$59,800	\$62,600	N/A	-4.5%

Average annual bonus for 2004: \$3,300

BY EXPERIENCE LEVEL

< 10 years	10-20 years	>20 years	Differential
\$57,200	\$65,000	\$67,500	+18.0%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$67,800	\$60,800	\$65,600	\$56,600	\$58,200

**Non-mainframe Linux*

Note: N/A indicates not available — the question was not asked in our 2001 survey.

Internet Manager/Director

Overall, Internet managers and directors, who are responsible for development and management of company intranet and public Web sites, have seen declines in terms of salaries. They currently earn base salaries of about \$71,000 — reflecting a nine percent decline since the last Enterprise Systems survey in 2002.

However, top-rate premiums are paid to those who support CRM and supply-chain management environments. Internet directors in these industry sectors make \$80,20 and \$77,400 respectively. By industry sector, salaries are strongest within the service sector, averaging \$90,800, or about 28 percent above the industry average. Across the board, Internet directors are projected to earn bonuses of about \$5,000, or seven percent of their base salaries for this year.

The typical Internet director in our survey has about nine years of industry experience, and salary growth prospects are excellent for this profession. Our results show a 47 percent differential based on experience — from \$50,100 a year to \$73,800 for those with more than five years' worth of experience.

Internet Director/Manager Salaries

YEAR-TO-YEAR CHANGE

2004	2002	2001	Change 02-04
\$71,000	\$78,400	\$65,200	-9.4%

Average annual bonus for 2004: \$5,000

BY EXPERIENCE LEVEL

< 5 years	>5 years	Differential
\$50,100	\$73,800	+47.3%

BY OPERATING SYSTEM ENVIRONMENT

Mainframe	OS/400	AIX/Unix	Windows	Linux*
\$85,700	\$77,800	\$76,100	\$63,700	\$69,800

**Non-mainframe Linux*

Part 3: IT Follows Bicoastal Economy

The Northeast and West Coast continue to lead in IT compensation

Joe McKendrick

When it comes to earning the highest salary, the east and west coasts clearly dominate. In the third part of our 2004 Salary Survey, we look at variations in salary and bonuses for IT positions across the U.S., and tell you which industry pays techies the most.

For IT professionals seeking top dollars, it's best to seek out places near the water. The two coasts — and one in the middle — dominate as havens for IT managers and staff professionals seeking the most money for their expertise. Companies in the northeastern United States — with its constellation of major cities — offer the top IT compensation. Following closely are West Coast cities, with the Bay Area (stretching from San Francisco to San Jose) still serving as a top draw for IT talent — signaling a bounce from the post-dot-com malaise that gripped the valley.

In addition, while conventional wisdom dictates that the largest organizations will pay the highest salaries, there are some IT positions where size doesn't make a difference. Small firms still need to compete with large corporations for IT talent, and often will pay comparably.

These are among the findings of our survey of 1,130 enterprise-IT sites. We tracked salary figures for IT managers and professionals across a broad spectrum of organizations. A majority of respondents (54 percent) are managers of IT departments or principals with their company. Our survey covered eight IT management positions, including chief information officers/vice presidents, IS directors, IS managers, application development managers, data center/operations managers, networking managers, help desk/support managers, and Internet managers/directors.

The survey also covered seven IT line (staff) positions, including applications systems analysts, programmer/analysts, application programmers, system programmers, network administrators, system administrators, and database administrators.

In this section we examine IT salaries from both a geographic and industry-specific perspective. The survey divides the respondents into four regions across the country, as shown in Table 1. Table 2 drills down further to explore salaries across 12 major metro areas. Table 3 explores salary differentials based on industry groups, and Table 4 looks at the impact of company size on IT salaries.

Northeast

Overall, companies in the northeastern United States — defined as the region that incorporates New England and the Mid-Atlantic states (NY, NJ, PA, MD, DC) down to Washington, D.C. — pay the highest rates for most IT positions. Northeast rates top the rest of the nation in 10 out of the 15 positions covered in the survey, and come in second place for the remainder.

These high rates are in large part driven by IT salaries in the New York metropolitan area, which includes New York City, Long Island, the lower Hudson Valley area, southern Connecticut, and northern New Jersey. New York-area companies pay the fourth highest salaries among 12 metropolitan areas examined in the survey for upper IT management (\$124,000), and the highest for developers/analysts (\$74,000), and administrators (\$79,500). Middle-management IT positions in New York companies come in fifth at \$80,700. (Note: In the metropolitan rankings shown in Table 2, job titles are aggregated into general categories to compensate for smaller sample sizes.)

The Northeast also includes such heavyweight cities as Boston, Philadelphia, and Washington, D.C. — all of which pay above the national average found in this survey. In fact, while C-level salaries are relatively low within the Washington, D.C. metropolitan

area, IT middle management and staff positions ranked among the highest in the country. The Boston area also has high IT salaries, particularly for administrator positions.

South/Southeast

Information technologies in the South/Southeast region of the country — defined in our survey as the region extending from Virginia to Texas — kept in synch with the national average. The region led in salaries for two positions — IS

managers and programmers. However, the salaries for most IT staff positions lagged other regions of the country.

The picture for the major southern metropolitan areas covered in this survey — Atlanta, Miami, Dallas, and Houston — is mixed. While top-level management salaries in the two Texas cities were well above the national averages, staff IT positions lagged. Conversely, in the Eastern Seaboard cities of Atlanta and Miami, upper-management compensation lagged, while staff positions exceeded the national average.

TABLE 1: IT Salaries by Region

Region	NE	SE	MW	W
CIO/VP	135.2	112.9	138.6	128.9
IS Director	101.1	92.4	90.5	95.7
IS Manager	84.1	84.5	74.2	81.7
App Dev Mgr.	89.9	87.3	84.1	91.5
Data Center Mgr.	85.5	77.5	77.7	77.2
Network Mgr.	79.3	68.1	66.8	68.2
Help Desk Mgr.	63.3	60.9	56.7	62.2
Internet Mgr.	76.7	70.2	62.8	74.5
Sys. Analyst	76.6	67.7	73.2	70.4
P/A	68.5	64.1	61.6	66.6
Apps. Prog.	53.7	55.4	52.7	52.8
Systems Prog.	75.9	68.0	76.6	70.0
Net. Admin.	63.8	56.1	53.1	58.2
Sys. Admin.	67.2	54.0	54.9	54.2
DB Admin.	77.8	70.8	68.7	71.3

Salaries in thousands of dollars (\$ 000)

Midwest

In this region, Chicago clearly leads as the corporate capital. The survey finds top executives in the Chicago metropolitan area garner an average of \$128,200 annually in base salaries, leading the 12 areas covered in this survey. Middle management and staff positions also exceed the national average in this survey.

However, Chicago's high salaries do not extend beyond its far suburbs to the rest of the nation's heartland. Information technology salaries in the Midwest — defined in our survey as the region that extends from Ohio in the East to the Great Plains states in the west — lag those of other regions. While CIO/vice president salaries top all other regions at \$138,600, most other positions rank lowest of the four regions covered. A lower cost of living, of course, may mitigate the impact on salaries

West

The West — all states from the Rocky Mountains to the Pacific Ocean — is a strong contender with the Northeast in high salary levels. Two major areas drive much of these salary levels — southern California (anchored by Los Angeles) and the Bay Area (San Francisco, San Jose, and everything in between). For top-level IT executives, L.A. is the place to work, with average annual base salaries of \$125,100, our survey finds.

The Bay Area still appears to be the place to be for many IT professionals. Upper managers bring in a \$122,400 annual base salary, and middle managers are making \$86,200 — the second-highest level for all metro areas covered in the survey (cost of living notwithstanding). Bay Area salaries for developers/analysts and administrators also rank higher than the national average at \$72,400 and \$65,400 respectively.

TABLE 2: IT Salaries by Metropolitan Area

	Upper mgt	Middle mgt	Developer	Administrator
New York NY/NJ/CT	124.0	80.7	74.0	79.5
Chicago IL/NW IN	128.2	78.6	70.3	64.8
Los Angeles/So. CA	125.1	81.1	69.5	63.2
Boston MA/RI	124.6	77.2	72.3	76.4
San Francisco/San Jose CA	122.4	86.2	72.4	65.4
Houston TX	118.4	73.3	52.4	55.1
Philadelphia PA/NJ/DE	116.2	78.6	70.0	50.9
Washington DC/MD/VA	113.8	88.0	70.4	70.8
Dallas TX	112.4	79.5	67.1	62.5
TOTAL U.S.	106.6	74.9	64.5	61.1
Atlanta GA	89.7	82.5	70.3	61.8
Miami FL	88.0	75.6	60.8	58.3
Seattle WA	87.5	66.8	60.5	60.0

Salaries in thousands of dollars (\$ 000)

High-Tech Pays Techies the Most

Overall, IT managers and professionals in the software and high-tech industries are commanding the highest annual base salaries in the survey. Table 3 provides salary breakouts by major industry group.

Software and high tech do not dominate in pay for top IT executives, however. For CIOs and vice presidents of IT, the highest rewards are found in the utility/transportation sector, where the average salary is \$181,000. C-level executives in the retail/distribution sector follow at \$158,500 a year, and healthcare CIOs make about \$137,500. Software/high-tech does top the list for IT directors, however, with salaries averaging \$108,900. IT directors at utility/transportation organizations follow closely at \$106,800.

The software/high-tech sector competes with financial services/insurance for salary rates across most of the middle-management positions surveyed. Information systems and application development managers within financial organizations command the highest rates in the survey, earning \$92,800 and \$95,500 respectively. Data center, networking, and help-desk managers within software/high-tech make the most within their categories, at \$85,300, \$80,000, and \$65,900. Among Internet managers, the highest draw is within service-sector organizations (\$90,800), followed by healthcare

organizations (\$86,000) and retailers (\$84,500).

Overall, software/high-tech organizations also compete for the highest salary rates for staff-level developers and administrators. Computer companies pay about \$75,800 a year for systems analysts, along with \$75,800 paid by service-sector companies. These IT companies are also locked in a virtual tie with financial services firms for programmer/analysts

(\$71,900 versus \$72,700). Financial service firms pay the highest rates for systems programmers (\$80,500), while retailers pay the highest premiums for basic programmers (\$58,900).

Software/high-tech and financial services firms also are paying top dollar overall for administrator positions. DBAs at computer companies are averaging \$78,300, followed closely by those with financial services firms at \$77,800.

TABLE 3: IT Salaries by Industry

	IT/High Tech	Mfg.	Gov't./Educ.	Finance/Ins.
CIO/VP	122.1	135.0	102.8	158.5
IS Director	108.9	91.7	82.3	101.3
IS Manager	90.9	78.1	73.3	92.8
App Dev Mgr.	94.2	83.2	78.5	95.5
Data Center Manager	85.3	72.8	71.8	85.1
Network Mgr.	80.0	66.1	64.1	78.7
Help Desk Mgr.	65.9	63.6	59.1	60.9
Sys. Analyst	75.8	67.4	64.1	72.2
P/A	71.9	55.7	57.9	72.7
Programmer	54.4	52.4	47.8	56.3
Systems Prgr.	70.6	79.4	63.2	80.5
Net. Admin.	61.1	53.1	55.9	55.8
Sys. Admin.	61.4	52.8	54.7	57.5
DB Admin.	78.3	77.6	61.1	77.8
	Retail/Dist.	Health	Uts./Trans.	Services
CIO/VP	150.0	137.5	181.0	122.7
IS Director	97.9	100.5	106.8	95.0
IS Manager	74.6	80.1	89.8	82.3
App Dev Mgr.	89.2	80.6	86.3	95.0
Data Center Manager	69.0	83.0	85.6	75.1
Network Mgr.	78.8	78.1	67.6	67.5
Help Desk Mgr.	56.2	65.0	59.5	49.9
Sys. Analyst	66.0	71.8	69.6	75.8
P/A	61.7	67.9	61.9	62.0
Programmer	58.9	58.0	49.7	48.9
Systems Prgr.	74.2	73.7	65.3	72.6
Net. Admin.	59.2	60.9	61.8	53.1
Sys. Admin.	50.5	61.8	57.5	60.1
DB Admin.	66.7	74.8	68.8	74.0

Salaries in thousands of dollars (\$ 000)

Company Size Matters, but there are Exceptions

It comes as no surprise that larger companies pay better for many IT positions than smaller ones. However, the survey finds that IT salaries at the largest organizations participating in our survey are comparable to those of their mid-sized counterparts. For example, CIO and vice presidential-level salaries remain fairly competitive across all company sizes, with no clear pattern apparent from the survey results. Table 4 provides average salary figures sorted by company sizes.

For the next level of IT directors, however, the disparity between large and small organizations becomes evident. IT directors in the smallest firms (50 or fewer employees) make an average of \$75,900 in annual base salary, a figure which tops \$100,000 in employees with 1,000 or more employees, and reaches \$118,200 in the largest organizations in the survey — companies with 50,000 or more employees.

Across middle management positions, the smallest firms in the survey pay between \$52,800 and \$76,600. This range increases to \$63,400 to \$108,200 within upper-echelon organizations. The disparity is greatest among networking managers, who are paid an average of \$54,100 in the smallest firms. This is exactly half the salary level for networking managers in the large organizations surveyed.

The disparity for IT development staff positions is not as dramatic as that of IT managers. In fact, some developers in smaller companies make almost as much as their large-organization counterparts. For example, there is no discernible pattern for the influence of company size on systems programmer salaries. Systems analysts in larger organizations make between \$76,200 and \$83,100, which is roughly one-fifth to a third more than the average \$63,100 in smaller to mid-size companies.

Administrative professionals in larger organizations clearly enjoy higher rates than their small to medium-size company counterparts. Database administrators average about \$58,300 in the smallest companies surveyed, a level that rises to \$82,000 in the large-organization categories — a 40 percent bump. Network administrators in some of the larger categories earn almost double their small-company counterparts — \$68,600 versus \$46,900 in annual base salaries.

TABLE 4: IT Salaries by Company Size

# employees:	1-50	51-500	501-1k	1-5k	5-10k	10-50k	50k+
CIO/VP	112.6	108.1	139.2	118.0	204.4	151.7	130.6
IS Director	75.9	84.9	81.1	101.0	103.8	116.3	118.2
IS Manager	62.6	70.8	70.1	78.8	93.7	95.3	97.5
AD Mgr.	76.6	84.2	74.2	81.7	93.6	97.8	95.3
DC Mgr.	49.9	74.1	62.8	77.0	103.1	92.1	90.9
Net. Mgr.	54.1	63.3	55.8	75.2	78.3	108.2	94.4
H/Desk. Mgr.	52.8	53.3	48.8	67.0	70.9	63.4	66.2
Internet Mgr.	59.8	59.3	63.3	74.1	74.9	99.1	n/a
Sys. Analyst	63.1	63.5	63.9	68.5	69.0	83.0	76.2
P/A	59.8	60.5	58.2	63.0	62.2	68.3	71.0
Progr.	43.7	50.3	46.9	55.6	52.3	62.2	60.3
Sys. Progr.	79.9	58.5	49.2	71.6	67.0	76.3	75.8
Net. Admin.	46.9	56.0	53.1	58.9	68.6	63.5	64.4
Sys. Admin.	56.3	49.1	50.9	57.8	62.9	58.2	62.8
DB Admin.	58.3	64.5	67.6	73.8	82.5	75.4	81.2

Salaries in thousands of dollars (\$ 000)

Part 4: IT Attitudes and Demographics

Most IT Workers Happy with Jobs, Unhappy with Salaries

Joe McKendrick

Respondents to our survey seem to be taking the punishing nature of their jobs in stride. There is less satisfaction as you work down the chain (from executive to staff position) — and outright dissatisfaction with compensation among IT technical staff.

In many professions, having to cope with punishing hours, complex problems, short deadlines, and demanding customers is the sure route to burnout. This may be the case for many in IT as well, but overall, IT professionals appear to be taking things in stride. But the recent economic slump appears to be taking a toll, and dissatisfaction with salary rates is rising in the ranks.

Wrapping up the last of our four-part series, we look at the demographics and attitudes of survey respondents toward their jobs and compensation levels.

As shown in Table 1, there has been a decline in overall satisfaction with compensation levels. The survey finds that four out of 10 IT staff members are unhappy with their current compensation levels. Satisfaction with compensation is relatively high at the executive level, but drops noticeably when looking at rank-and-file IT professionals (see Table 2). About 64 percent of top IT executives are happy with their salary levels, compared to about half of IT staff workers — in fact, 39 percent express downright dissatisfaction.

TABLE 1: Salary Satisfaction

	2001	2004
Satisfied	63 %	58 %
Dissatisfied	31 %	33 %

TABLE 2: Salary Dissatisfaction By Job Level

IT staff	39 %
Middle manager	34 %
Consultant	30 %
Executive	28 %

The recent Enterprise Systems salary survey found that top IT executives make up to \$130,000 a year, along with bonuses of between \$10,000 and \$25,000 a year. Line IT positions (analysts, programmers, administrators) average between \$61,000 to \$64,000 a year, with bonuses of \$2,000 to \$3,000 a year. Our survey finds that companies raised salary rates for five out of seven key staff positions. However, increases only ranged between three percent and seven percent over the two years since our last survey.

IT managers and professionals are working just as hard as ever, the survey also confirms. As shown in Table 3, very few IT people simply put in their 40 hours and go home. About 18 percent, in fact, work more than 50 hours a week, the same as in our 2001 survey. Another 60 percent work between 40 and 50 hours a week. Of course, work hours vary by job level. Among those respondents holding top executive positions, 39 percent work more than 50 hours a week. By contrast, 21 percent of middle managers and nine percent of IT staff members put in these kinds of hours.

All this hard work is worthwhile for a majority of IT professionals, however. More than seven out of ten (72 percent) say they are satisfied with their jobs, and 20 percent categorize themselves as "extremely" satisfied (see Table 4—remainder of respondents were neutral or had no opinion). However, this has slipped somewhat over the past few years. In our 2001 survey, 79 percent expressed job satisfaction, and 25 percent at that time said they were extremely satisfied. Overt job dissatisfaction has gone up during this time, increasing from 15 percent to 22 percent.

TABLE 3: Hours Worked Per Week

	2001	2004
40 or less	18 %	21 %
41-45	31 %	32 %
46-50	32 %	29 %
More than 50	18 %	18 %

TABLE 4: Job Satisfaction

	2001	2004
Satisfied	79 %	72 %
Dissatisfied	15 %	22 %

As shown in Table 5, more than one out of four IT staffers is unhappy with his or her position. While this is unchanged from our 2001 survey, this continuing undercurrent of job dissatisfaction may portend issues with turnover as the economy improves and companies are again forced to compete more aggressively for qualified professionals. Perhaps not surprisingly, the higher up in the food chain one is, the more satisfied he or she is with her position. Only 15 percent of top IT executives express any type of job dissatisfaction, compared with 27 percent of IT staffers.

Interestingly, managers and professionals in Windows environments seem the happiest with their jobs — about 79 percent express contentment. Those with the lowest levels of job satisfaction are managers and professionals in mainframe shops.

The overwhelming majority of respondents to this survey — which reflects much of the large-systems IT world, in general — are male. Eighty-five percent are men, down from 89 percent in our 2001 and 2002 surveys. The survey also confirms that the glass ceiling still predominates in the IT world. Only eight percent of top-level IT executives are women, compared to 16 percent of middle managers and 16 percent of IT staff positions.

Joseph McKendrick is an independent consultant and author, specializing in surveys, technology research and white papers.

TABLE 5: Job Dissatisfaction By Job Level

IT staff	27 %
Consultant	22 %
Middle manager	19 %
Executive	15 %

APPENDIX: JOB DESCRIPTIONS

Chief Information Officer/Vice President Information Systems

Approves budgets; oversees the company's information systems function; considered a part of the senior management team. Makes final decisions on standards and protocols. In charge of the company's Internet strategy. Approves outsourcing arrangements. May also oversee electronic commerce function.

Director, Information Systems

Plans, directs and controls all day-to-day information systems functions, including systems design and analysis, applications programming, project scheduling and computer operations. Plans and approves equipment and software purchases. Responsible for full and part-time staffing, as well as hiring of contractors. May be responsible for overseeing internal and external Internet development as well.

Manager, Information Systems

Plans and approves equipment and software purchases related to systems (operating systems, related software, storage devices, etc.). Plans, directs and controls all day-to-day information systems functions, including systems design and analysis, applications programming, project scheduling and computer operations. Responsible for full and part-time staffing, as well as hiring of contractors. Manages the systems analysis and programming of applications. Responsible for cost and time estimates, feasibility studies, and design and implementation of new or modified systems and programs. Oversees systems administrators and analysts.

Manager, Application Development

Plans, directs and controls all day-to-day application development functions, applications programming, project scheduling, and computer operations. Plans and recommends equipment and software purchases related to applications. Responsible for full and part-time staffing related to application development, as well as hiring of contractors. May be responsible for Internet development teams as well. Often reports to a director, VP of technology, CTO or CIO.

Manager, Data Center/Operations

Oversees day-to-day operations of production data center environments. Develops and implements plans and budgets for operation and staff utilization. Responsible for running a 24x7x365 operation to meet service level agreements (SLAs) for internal and external customers. Oversees systems monitoring, backups, storage, job scheduling, and systems management reporting. Negotiates contracts with vendors. Tracks and maintains inventory for equipment, licenses, software, and related items. Typically leads teams of system administrators, database administrators, and computer operators.

Manager, Networking

Oversees the operation of the computer network. Designs, installs, and manages building local area networks and wide area networks across the organization. Plans and implements current and future development, including connectivity on and off-site from remote locations. Manages the organization's IP addresses. Advises or makes recommendations on networking issues. Oversees installation and maintenance of network files, file servers, routers, VPNs, concentrators, network software, network cards, and related hardware and software. Designs and installs file back-up routines and network security systems. Manager's group is responsible for securing network, managing user access, protecting against or recovering from attacks, viruses, and other vulnerabilities. Oversees network administrators and analysts.

Manager, Help Desk/Support

Responsible for diagnosing, troubleshooting, and correcting end-user system access problems. Interfaces with end-users primarily by telephone, e-mail, Web, and in cases of hardware failure, face-to-face. May oversee staff of help-desk analysts within a larger company; or work alone in smaller companies or divisions of larger companies. Establishes procedures for trouble-ticket submission and actions. May be involved in Web site creation, design and maintenance as it pertains to FAQs and other support sites. Interfaces frequently with IT network staff to resolve issues.

Applications Systems Analyst

Works with corporate management, end-users and clients to plan and design systems. Devises processes for solving specific business problems. Recommends specific applications. Prepares charts and diagrams and develops documentation. Also prepares test cases and reviews test results. May be a team lead; may manage others.

Applications Programmer/Analyst

Develops applications and environments. Formulates statements of business problems and devises procedures for the solutions of the problems. Works with end-users to determine their information requirements in new or modified systems. Prepares logic flow charts, codes and specifications. May be a team lead; but does not directly manage others.

Applications Programmer

Typically an entry-level position. Writes coded instructions or software, or modifies packaged applications, from descriptions outlined by systems analysts. Outlines detailed equipment requirements. Designs detailed flowcharts, verifies program logic by preparing test data for trial runs. Tests and debugs programs. Does not manage others.

Systems Programmer

Deploys, monitors, maintains, and reports the performance of all aspects of the system. Oversees server operating systems, compilers, communications and database management software, utilities, and storage systems. Ensures system performance and integrity. Provides system analysis, maintenance support, disaster recovery support, general systems support and documentation. Usually does not manage others.

Network Administrator

Monitors network usage. Oversees network security and integrity; troubleshoots network bottlenecks or failed connections in routers, switches, hubs, or concentrators. Responsible for backup and recovery of the network. Conducts installation and maintenance, recommends purchase of network hardware, software and network middleware. May also have responsibilities for public and private Web site connections and performance. Administrator's group is responsible for securing network, managing user access, protecting against or recovering from attacks, viruses, and other vulnerabilities. May be a team lead; does not directly manage others.

Systems Administrator

Deploys and maintains operating systems and servers in a LAN or WAN. Configures boxes, establishes standards, evaluates hardware and software. Adds or removes user accounts, performs data backup and recovery, maintains system database files. Writes scripts in administrative languages. Also responsible for integration, maintenance, performance management, and data management. Plays a key role in network security, builds firewalls, applies cryptography or authentication systems. Troubleshoots networking and operating system problems; may also serve as part of help-desk function. May be a team lead; does not directly manage others.

Database Administrator

Oversees building and usage of company databases. Oversees database security and integrity. May be responsible for backup and recovery of data. Recommends purchases of database software and hardware. May be a team lead, or may manage others.

Internet Manager/Director

Responsible for development and management of company intranet and public Web sites. May be responsible for contracts with outside Web hosting services/ISPs. May also be responsible for security, integrity, and troubleshooting of network bottlenecks or failed connections. Manages Web development teams, including HTML and Java programmers. Works across departments and technologies.



You need to prove who's accessing your most important corporate information.

With Entegra™, you will.



Sarbanes-Oxley Section 404 requires tighter internal controls on your corporate data. To ensure compliance, you need an unimpeachable audit trail of who's accessing, viewing, or changing your data. Lumigent® Entegra™ is a comprehensive data auditing solution that helps you meet this requirement. So you can mitigate the risks of non-compliance and data misuse.

Find out more.

Request your free white paper, *"Audit the Data – Or Else"*, by visiting www.lumigent.com. Or call us at **1 866-LUMIGENT** (1 866-586-4436).

