

# Occupational Outlook Handbook, 2006-07 Edition

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## Computer and Information Systems Managers

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### Significant Points

- Employment of computer and information systems managers is expected to grow faster than the average for all occupations through the year 2014.
- Many managers possess advanced technical knowledge gained from working in a computer occupation.
- Job opportunities will be best for applicants with computer-related work experience; a master's degree in business administration (MBA) with technology as a core component, or a management information systems degree; and strong communication and administrative skills.

### Nature of the Work

How and when companies and organizations use technology are critical to remaining competitive. Computer and information systems managers play a vital role in the technological direction of their organizations. They do everything from constructing the business plan to overseeing network security to directing Internet operations.

Computer and information systems managers plan, coordinate, and direct research and facilitate the computer-related activities of firms. They help determine both technical and business goals in consultation with top management and make detailed plans for the accomplishment of these goals. For example, working with their staff, they may develop the overall concepts and requirements of a new

product or service, or may identify how an organization's computing capabilities can effectively aid project management.

Computer and information systems managers direct the work of systems analysts, computer programmers, support specialists, and other computer-related workers. These managers plan and coordinate activities such as installation and upgrading of hardware and software, programming and systems design, development of computer networks, and implementation of Internet and intranet sites. They are increasingly involved with the upkeep, maintenance, and security of networks. They analyze the computer and information needs of their organizations from an operational and strategic perspective and determine immediate and long-range personnel and equipment requirements. They assign and review the work of their subordinates and stay abreast of the latest technology to ensure the organization does not lag behind competitors.

The duties of computer and information systems managers vary with their specific titles. *Chief technology officers*, for example, evaluate the newest and most innovative technologies and determine how these can help their organizations. The chief technology officer, who often reports to the organization's chief information officer, manages and plans technical standards and tends to the daily information technology issues of the firm. (Chief information officers are covered in a separate *Handbook* statement on [top executives](#).) Because of the rapid pace of technological change, chief technology officers must constantly be on the lookout for developments that could benefit their organizations. They are responsible for demonstrating to a company how information technology can be used as a competitive tool that not only cuts costs, but also increases revenue and maintains or increases competitive advantage.

*Management information systems (MIS) directors* manage information systems and computing resources for their organizations. They also may work under the chief information officer and plan and direct the work of subordinate information technology employees. These managers oversee a variety of user services such as an organization's help desk, which employees can call with questions or problems. MIS directors also may make hardware and software upgrade recommendations based on their experience with an organization's technology. Helping ensure the availability, continuity, and security of data and information technology services is the primary responsibility of these workers.

*Project managers* develop requirements, budgets, and schedules for their firms' information technology projects. They coordinate such projects from development through implementation, working with internal and external clients, vendors, consultants, and computer specialists. These managers are increasingly involved in projects that upgrade the information security of an organization.

*LAN/WAN (local area network/wide area network) managers* provide a variety of services, from design to administration of the local area network, which connects staff within an organization. These managers direct the network and its computing environment, including hardware, systems software, applications software, and all other computer-related configurations.

Computer and information systems managers need strong communication skills. They coordinate the activities of their unit with those of other units or organizations. They confer with top executives; financial, production, marketing, and other managers; and contractors and equipment and materials suppliers.

## **Working Conditions**

Computer and information systems managers spend most of their time in an office. Most work at least 40 hours a week and may have to work evenings and weekends to meet deadlines or solve unexpected problems. Some computer and information systems managers may experience considerable pressure in meeting technical goals within short timeframes or tight budgets. As networks continue to expand and more work is done remotely, computer and information systems managers have to communicate with and oversee offsite employees using modems, laptops, e-mail, and the Internet.

Like other workers who sit continuously in front of a keyboard, computer and information systems managers are susceptible to eyestrain, back discomfort, and hand and wrist problems such as carpal tunnel syndrome.

## **Training, Other Qualifications, and Advancement**

Advanced technical knowledge is essential for computer and information systems managers, who must understand and guide the work of their subordinates yet also explain the work in nontechnical terms to senior managers and potential customers. Therefore, many computer and information systems managers have experience in a computer occupation such as systems analyst; other managers may have worked as a computer support specialist, programmer, or other information technology professional.

A bachelor's degree usually is required for management positions, although employers often prefer a graduate degree, especially an MBA with technology as a core component. This degree differs from a traditional MBA in that there is a heavy emphasis on information technology in addition to the standard business curriculum. This preparation is becoming important because more computer and information systems managers are making important technology decisions as well as business decisions for their organizations. Some universities specialize in offering degrees in management information systems, which blend technical core subjects with business, accounting, and communications courses. A few computer and information systems managers attain their positions with only an associate degree, but they must have sufficient experience and must have acquired additional skills on the job. To aid their professional advancement, though, many managers with an associate degree eventually earn a bachelor's or master's degree while working.

Computer and information systems managers need a broad range of skills. Employers want managers who have experience with the specific software or technology used on the job, as well as a background in either consulting or business management. The expansion of electronic commerce has elevated the importance of business insight; many computer and information systems managers are called on to make important business decisions. Managers need a keen understanding of people, management processes, and customers' needs.

Computer and information systems managers must possess strong interpersonal, communication, and leadership skills because they are required to interact not only with their staff, but also with other people inside and outside their organizations. They also must possess team skills to work on group projects and other collaborative efforts. Computer and information systems managers increasingly interact with persons outside their organizations, reflecting their emerging role as vital parts of their firms' executive teams.

Computer and information systems managers may advance to progressively higher leadership positions in their field. Some may become managers in nontechnical areas such as marketing, human resources, or sales. In high-technology firms, managers in nontechnical areas often must possess the same specialized knowledge as do managers in technical areas.

## **Employment**

Computer and information systems managers held about 280,000 jobs in 2004. About 9 in 10 computer managers worked in service-providing industries, mainly in computer systems design and related services. This industry provides services related to the commercial use of computers on a contract basis, including custom computer programming services; computer systems integration design services; computer facilities management services, including computer systems or data-processing facilities support services; and other computer-related services, such as disaster recovery services and software installation. Other large employers include insurance and financial firms, government agencies, and manufacturers.

## **Job Outlook**

Employment of computer and information systems managers is expected to [grow faster than the average](#) for all occupations through the year 2014. Technological advancements will boost the employment of computer-related workers; as a result, the demand for managers to direct these workers also will increase. In addition, job openings will result from the need to replace managers who retire or move into other occupations. Opportunities for obtaining a management position will be best for those with

computer-related work experience; an MBA with technology as a core component, or a management information systems degree; and strong communication and administrative skills.

Despite the downturn in the technology sector in the early part of the decade, the outlook for computer and information systems managers remains strong. To remain competitive, firms will continue to install sophisticated computer networks and set up more complex Internet and intranet sites. Keeping a computer network running smoothly is essential to almost every organization. Firms will be more willing to hire managers who can accomplish that.

Similarly, the security of computer networks will continue to increase in importance as more business is conducted over the Internet. The security of the Nation's entire electronic infrastructure has come under renewed scrutiny in light of recent threats. Organizations need to understand how their systems are vulnerable and how to protect their infrastructure and Internet sites from hackers, viruses, and other acts of cyberterrorism. The emergence of cybersecurity as a key issue facing most organizations should lead to strong growth for computer managers. Firms will increasingly hire cybersecurity experts to fill key leadership roles in their information technology departments because the integrity of their computing environments is of utmost concern. As a result, there will be a high demand for managers proficient in computer security issues.

With the explosive growth of electronic commerce and the capacity of the Internet to create new relationships with customers, the role of computer and information systems managers will continue to evolve. Persons in these jobs will become increasingly vital to their companies. The expansion of the wireless Internet will spur the need for computer and information systems managers with both business savvy and technical proficiency.

Opportunities for those who wish to become computer and information systems managers should be closely related to the growth of the occupations they supervise and the industries in which they are found. (See the statements on [computer programmers](#), [computer software engineers](#), [computer support specialists and systems administrators](#), [computer systems analysts](#), and [computer scientists and database administrators](#) elsewhere in the *Handbook*.)

## Earnings

Earnings for computer and information systems managers vary by specialty and level of responsibility. Median annual earnings of these managers in May 2004 were \$92,570. The middle 50 percent earned between \$71,650 and \$118,330. Median annual earnings in the industries employing the largest numbers of computer and information systems managers in May 2004 were as follows:

Software publishers

\$107,870

Computer systems design and related services	103,850
Management of companies and enterprises	99,880
Insurance carriers	97,900
Depository credit intermediation	86,450

According to Robert Half International, a professional staffing and consulting services firm, average starting salaries in 2005 for high-level information technology managers ranged from \$80,250 to \$112,250. According to a 2005 survey by the National Association of Colleges and Employers, starting salary offers for those with an MBA, a technical undergraduate degree, and 1 year or less of experience averaged \$52,300; for those with a master's degree in management information systems/business data processing, the starting salary averaged \$56,909.

In addition, computer and information systems managers, especially those at higher levels, often receive more employment-related benefits—such as expense accounts, stock option plans, and bonuses—than do nonmanagerial workers in their organizations.

## Related Occupations

The work of computer and information systems managers is closely related to that of [computer programmers](#), [computer software engineers](#), [computer systems analysts](#), [computer scientists and database administrators](#), and [computer support specialists and systems administrators](#). Computer and information systems managers also have some high-level responsibilities similar to those of [top executives](#).

## Sources of Additional Information

### Disclaimer:

Links to non-BLS Internet sites are provided for your convenience and do not constitute an endorsement.

For information about a career as a computer and information systems manager, contact the sources of additional information for the various computer occupations discussed elsewhere in the *Handbook*.

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