

Occupational Outlook Handbook, 2008-09 Edition

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Computer Support Specialists and Systems Administrators

- [Nature of the Work](#)
- [Training, Other Qualifications, and Advancement](#)
- [Employment](#)
- [Job Outlook](#)
- [Projections Data](#)
- [Earnings](#)
- [OES Data](#)
- [Related Occupations](#)
- [Sources of Additional Information](#)

SIGNIFICANT POINTS

- Growth in computer support specialist jobs will be about as fast as the average, while growth in network and computer system administrator jobs will be much faster than average.
- There are many paths of entry to these occupations.
- Job prospects should be best for college graduates with relevant skills and experience; certifications and practical experience are essential for people without degrees.

NATURE OF THE WORK

[Back to Top](#)

In the last decade, computers have become an integral part of everyday life at home, work, school, and nearly everywhere else. Of course, almost every computer user encounters a problem occasionally, whether it is the annoyance of a forgotten password or the disaster of a crashing hard drive. The explosive use of computers has created demand for specialists who provide advice to users, as well as for the day-to-day administration, maintenance, and support of computer systems and networks.

Computer support specialists provide technical assistance, support, and advice to customers and other users. This occupational group includes *technical support specialists* and *help-desk technicians*. These troubleshooters interpret problems and provide technical support for hardware, software, and systems. They answer telephone calls, analyze problems by using automated diagnostic programs, and resolve recurring difficulties. Support specialists work either within a company that uses computer systems or directly for a computer hardware or software vendor. Increasingly, these specialists work for help-desk or support services firms, for which they provide computer support to clients on a contract basis.

Technical support specialists respond to inquiries from their organizations' computer users and may run automatic diagnostics programs to resolve problems. They also install, modify, clean, and repair computer hardware and software. In addition, they may write training manuals and train computer users in how to use new computer hardware and software. These workers also oversee the daily performance of their company's computer systems and evaluate how useful software programs are.

Help-desk technicians respond to telephone calls and e-mail messages from customers looking for help with computer problems. In responding to these inquiries, help-desk technicians must listen carefully to the customer, ask questions to diagnose the nature of the problem, and then patiently walk the customer through the problem-solving steps.

Help-desk technicians deal directly with customer issues and companies value them as a source of feedback on their products. They are consulted for information about what gives customers the most trouble, as well as other customer concerns. Most computer support specialists start out at the help desk.

Network and computer systems administrators design, install, and support an organization's computer systems. They are responsible for local-area networks (LAN), wide-area networks (WAN), network segments, and Internet and intranet systems. They work in a variety of environments, including professional offices, small businesses, government organizations, and large corporations. They maintain network hardware and software, analyze problems, and monitor networks to ensure their availability to system users. These workers gather data to identify customer needs and then use the information to identify, interpret, and evaluate system and network requirements. Administrators also may plan, coordinate, and implement network security measures.

Systems administrators are responsible for maintaining network efficiency. They ensure that the design of an organization's computer system allows all of the components, including computers, the network, and software, to work properly together. Furthermore, they monitor and adjust the performance of existing networks and continually survey the current computer site to determine future network needs. Administrators also troubleshoot problems reported by users and by automated network monitoring systems and make recommendations for future system upgrades.

In some organizations, *computer security specialists* may plan, coordinate, and implement the organization's information security. These workers educate users about computer security, install security software, monitor networks for security breaches, respond to cyber attacks, and, in some cases, gather data and evidence to be used in prosecuting cyber crime. The responsibilities of computer security specialists have increased in recent years as cyber attacks have become more common. This and other growing specialty occupations reflect an increasing emphasis on client-server applications, the expansion of Internet and intranet applications, and the demand for more end-user support.

Work environment. Computer support specialists and systems administrators normally work in well-lit, comfortable offices or computer laboratories. They usually work about 40 hours a week, but if their employer requires computer support over extended hours, they may be "on call" for rotating evening or weekend work. Overtime may be necessary when unexpected technical problems arise. Like other workers who type on a keyboard for long periods, computer support specialists and systems administrators are susceptible to eyestrain, back discomfort, and hand and wrist problems such as carpal tunnel syndrome.

Computer support specialists and systems administrators constantly interact with customers and fellow employees as they answer questions and give advice. Those who work as consultants are away from their offices much of the time, sometimes spending months working in a client's office.

As computer networks expand, more computer support specialists and systems administrators may be able to provide technical support from remote locations. This capability would reduce or eliminate travel to the customer's workplace. Systems administrators also can administer and configure networks and servers remotely, although this practice is not as common as it is among computer support specialists.

TRAINING, OTHER QUALIFICATIONS, AND ADVANCEMENT

[Back to Top](#)

A college degree is required for some computer support specialist positions, but certification and relevant experience may be sufficient for others. A bachelor's degree is required for many network and computer systems administrator positions. For both occupations, strong analytical and communication skills are essential.

Education and training. Due to the wide range of skills required, there are many paths of entry to a job as a computer support specialist or systems administrator. Training requirements for computer support specialist positions vary, but many employers prefer to hire applicants with some formal college education. A bachelor's degree in computer science or information systems is a prerequisite for some jobs; other jobs, however, may require only a computer-related associate degree. And for some jobs, relevant computer experience and certifications may substitute for formal education. For systems administrator jobs, many employers seek applicants with bachelor's degrees, although not necessarily in a computer-related field.

A number of companies are becoming more flexible about requiring a college degree for support positions. In the absence of a degree, however, certification and practical experience are essential. Certification training programs, offered by a variety of vendors and product makers, may help some people to qualify for entry-level positions.

Other qualifications. People interested in becoming a computer support specialist or systems administrator must have strong problem-solving, analytical, and communication skills because troubleshooting and helping others are vital parts of the job. The constant interaction with other computer personnel, customers, and employees requires computer support specialists and systems administrators to communicate effectively on paper, via e-mail, over the phone, or in person. Strong writing skills are useful in preparing manuals for employees and customers.

Advancement. Beginning computer support specialists usually work for organizations that deal directly with customers or in-house users. Support specialists may advance into positions in which they use what they have learned from customers to improve the design and efficiency of future products. Job promotions usually depend more on performance than on formal education. Eventually, some computer support specialists become software engineers, designing products rather than assisting users. Computer support specialists in hardware and software companies often enjoy great upward mobility; advancement sometimes comes within months of becoming employed.

Entry-level network and computer systems administrators are involved in routine maintenance and monitoring of computer systems, typically working behind the scenes in an organization. After gaining experience and expertise, they often are able to advance to more senior-level positions. For example, senior network and computer systems administrators may make presentations to executives and managers on the security of the company computer network. They also may translate the needs of an organization into a set of technical requirements based on the available technology. As with support specialists, administrators may become software engineers involved in system and network design.

As technology continues to improve, computer support specialists and systems administrators must strive to acquire new skills. Many continuing education programs are provided by employers, hardware and software vendors, colleges and universities, and private training institutions. Professional development seminars offered by computing services firms also can enhance skills and advancement opportunities.

EMPLOYMENT

[Back to Top](#)

Computer support specialists and systems administrators held about 862,000 jobs in 2006. Of these, approximately 552,000 were computer support specialists and about 309,000 were network and computer systems administrators. Although they worked in a wide range of industries, about 23 percent of all computer support specialists and systems administrators were employed in professional, scientific, and technical services industries, principally computer systems design and related services. Substantial numbers of these workers were also employed in administrative and support services companies, financial institutions, insurance companies, government agencies, educational institutions, software publishers, telecommunications organizations, health care organizations, and management of companies and enterprises.

Employers of computer support specialists and systems administrators range from startup companies to established industry leaders. As computer networks become an integral part of business, industries not typically associated with computers—such as construction—increasingly need computer support workers.

JOB OUTLOOK

[Back to Top](#)

Employment of computer support specialists and systems administrators is expected to increase faster than the average. Job prospects should be best for those with a college degree and relevant experience.

Employment change. Employment of computer support specialists and systems administrators is expected to increase by 18 percent from 2006 to 2016, which is [much faster than the average](#) for all occupations. In addition, this occupation is expected to add 155,000 jobs over the projection decade.

Employment of computer support specialists is expected to increase by 13 percent from 2006 to 2016, which is [about as fast as the average](#) for all occupations. Demand for these workers will result as organizations and individuals continue to adopt increasingly sophisticated technology. Job growth will continue to be driven by the ongoing expansion of the computer system design and related services industry, which is projected to remain one of the fastest-growing industries in the U.S. economy. Growth will not be as explosive as during the previous decade, however, because the information technology industry is maturing and because some of these jobs are expected to be outsourced offshore where prevailing wages are lower. Physical location is not as important for computer support specialists as it is for other occupations because these workers can provide assistance remotely and support services are provided around the clock across time zones.

Job growth among computer support specialists reflects the rapid evolution of technology. As computers and software become more complex, support specialists will be needed to provide technical assistance to customers and other users. The adoption of new mobile technologies, such as the wireless Internet, will continue to create a need for these workers to familiarize and educate computer users. Consulting jobs for computer support specialists also should continue to increase as businesses seek help managing, upgrading, and customizing ever more complex computer systems.

Employment of network and computer systems administrators is expected to increase by 27 percent from 2006 to 2016, which is [much faster than the average](#) for all occupations. Computer networks have become an integral part of business, and demand for these workers will increase as firms continue to invest in new technologies. The wide use of electronic commerce and the increasing adoption of mobile technologies mean that more establishments will use the Internet to conduct business online. This growth translates into a need for systems administrators who can help organizations use technology to communicate with employees, clients, and consumers.

Demand for computer security specialists will grow as businesses and government continue to invest heavily in "cyber security," protecting vital computer networks and electronic infrastructures from attack. The information security field is expected to generate many new system administrator jobs over the next decade as firms across all industries place a high priority on safeguarding their data and systems.

Employment of network and computer systems administrators, however, may be tempered somewhat by offshore outsourcing, as firms transfer work to countries with lower-prevailing wages and highly skilled work forces. Systems administrators may increasingly be able to manage computer systems from remote locations as technology advances.

Job prospects. Job prospects should be best for college graduates who possess the latest technological skills, particularly graduates who have supplemented their formal education with relevant work experience. Employers will continue to seek computer specialists who possess strong fundamental computer skills combined with good interpersonal and communication skills. Due to the demand for computer support specialists and systems administrators over the next decade, those who have strong computer skills but do not have a college degree should continue to qualify for some entry-level positions.

PROJECTIONS DATA

[Back to Top](#)

Projections data from the National Employment Matrix

Occupational title	SOC Code	Employment, 2006	Projected employment, 2016	Change, 2006-16		Detailed statistics	
				Number	Percent		
Computer support specialists and systems administrators	--	862,000	1,016,000	155,000	18	--	--
Computer support specialists	15-1041	552,000	624,000	71,000	13	PDF	zipped XLS
Network and computer systems administrators	15-1071	309,000	393,000	83,000	27	PDF	zipped XLS

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on [Occupational Information Included in the Handbook](#).

EARNINGS

[Back to Top](#)

Median annual earnings of wage-and-salary computer support specialists were \$41,470 in May 2006. The middle 50 percent earned between \$32,110 and \$53,640. The lowest 10 percent earned less than \$25,290, and the highest 10 percent earned more than \$68,540. Median annual earnings in the industries employing the largest numbers of computer support specialists in May 2006 were as follows:

Software publishers	\$46,270
Management of companies and enterprises	42,770
Computer systems design and related services	42,510
Colleges, universities, and professional schools	40,130
Elementary and secondary schools	37,880

Median annual earnings of wage-and-salary network and computer systems administrators were \$62,130 in May 2006. The middle 50 percent earned between \$48,520 and \$79,160. The lowest 10 percent earned less than \$38,610, and the highest 10 percent earned more than \$97,080. Median annual earnings in the industries employing the largest numbers of network and computer systems administrators in May 2006 were as follows:

Wired telecommunications carriers	\$70,790
Computer systems design and related services	66,680
Management of companies and enterprises	66,020
Colleges, universities, and professional schools	54,590
Elementary and secondary schools	53,750

According to Robert Half Technology, starting salaries in 2007 ranged from \$27,500 to \$37,000 for help-desk workers. Starting salaries for desktop support analysts ranged from \$46,500 to \$65,250. For systems administrators, starting salaries ranged from \$50,000 to \$75,750.

FOR THE LATEST WAGE INFORMATION:

THE ABOVE WAGE DATA ARE FROM THE **OCCUPATIONAL EMPLOYMENT STATISTICS** (OES) SURVEY PROGRAM, UNLESS OTHERWISE NOTED. FOR THE LATEST NATIONAL, STATE, AND LOCAL EARNINGS DATA, VISIT THE FOLLOWING PAGES:

- [COMPUTER SUPPORT SPECIALISTS](#)
- [NETWORK AND COMPUTER SYSTEMS ADMINISTRATORS](#)

RELATED OCCUPATIONS

[Back to Top](#)

Other computer specialists include [computer programmers](#), [computer software engineers](#), [computer systems analysts](#), and [computer scientists and database administrators](#). Other workers who respond to customer inquiries are [customer service representatives](#).

SOURCES OF ADDITIONAL INFORMATION

[Back to Top](#)

DISCLAIMER:

LINKS TO NON-BLS INTERNET SITES ARE PROVIDED FOR YOUR CONVENIENCE AND DO NOT CONSTITUTE AN ENDORSEMENT.

For additional information about a career as a computer support specialist, contact:

- Association of Support Professionals, 122 Barnard Ave., Watertown, MA 02472.

For additional information about a career as a systems administrator, contact:

- The League of Professional System Administrators, 15000 Commerce Parkway, Suite C, Mount Laurel, NJ 08054. Internet: <http://lopsa.org/>
- National Workforce Center for Emerging Technologies, 3000 Landerholm Circle SE., Bellevue, WA 98007. Internet: <http://www.nwcet.org>

OOH ONET CODES

[Back to Top](#)

15-1041.00, 15-1071.00, 15-1071.01

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