Office and Administrative Support Occupations

Communications Equipment Operators

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Significant Points

- Switchboard operators constitute 3 out of 4 of these workers.
- Workers train on the job.
- Employment is expected to decline due to new laborsaving communications technologies and consolidation of jobs.

Nature of the Work

Most communications equipment operators work as *switchboard operators* for a wide variety of businesses, such as hospitals, hotels, and personnel-supply services. Switchboard operators operate private branch exchange (PBX) switchboards to relay incoming, outgoing, and interoffice calls, usually for a single organization. They also may handle other clerical duties, such as supplying information, taking messages, and announcing visitors. Technological improvements have automated many of the tasks handled by switchboard operators. New systems automatically connect outside calls to the correct destination, and voice mail systems take messages without the assistance of an operator.

Some communications equipment operators work as *telephone operators*, assisting customers in making telephone calls. Although most calls are connected automatically, callers sometimes require the assistance of an operator. *Central office operators* help customers complete local and long-distance calls. *Directory assistance operators* provide customers with information such as phone numbers or area codes.

When callers dial "0," they usually reach a central office operator, also known as a *local*, *long distance*, or *call completion operator*. Most of these operators work for telephone companies, and many of their responsibilities have been automated. For example, callers can make international, collect, and credit card calls without the assistance of a central office operator. Other tasks previously handled by these operators, such as billing calls to third parties or monitoring the cost of a call, also have been automated.

Callers still need a central office operator for a limited number of tasks. These include placing person-to-person calls or interrupting busy lines if an emergency warrants the disruption. When natural disasters occur, such as storms or earthquakes, central office operators provide callers with emergency phone contacts. They also assist callers having difficulty with automated phone systems. An operator monitoring an automated system for placing collect calls, for example, may intervene if a caller needs assistance with the system.

Directory assistance operators provide callers with information such as telephone numbers or area codes. Most directory assistance operators work for telephone companies; increasingly, they also work for companies that provide business services.

Switchboard operators constitute three-fourths of communications equipment operators.

Automated systems now handle many of the responsibilities once performed by directory assistance operators. The systems prompt callers for a listing, and may even connect the call after providing the phone number. However, directory assistance operators monitor many of the calls received by automated systems. The operators listen to recordings of the customer's request, and then key information into electronic directories to access the correct phone numbers. Directory assistance operators also provide personal assistance to customers having difficulty using the automated system.

Other communications equipment operators include workers who operate telegraphic typewriter, telegraph key, facsimile machine, and related equipment to transmit and receive signals and messages. They prepare messages according to prescribed formats, and verify and correct errors in messages. As part of their job, they also may adjust equipment for proper operation.

Working Conditions

Most communications equipment operators work in pleasant, well-lighted surroundings. Because telephone operators spend much time seated at keyboards and video monitors, employers often provide workstations designed to decrease glare and other physical discomforts. Such improvements reduce the incidence of eyestrain, back discomfort, and injury due to repetitive motion.

Switchboard operators generally work the same hours as other clerical employees at their company. In most organizations, full-time operators work regular business hours over a 5-day workweek. Work schedules are more irregular in hotels, hospitals, and other organizations that require round-the-clock operator services. In these companies, switchboard operators may work in the evenings and on holidays and weekends.

Central office and directory assistance operators must be accessible to customers 24 hours a day and, therefore, work a variety of shifts. Some operators work split shifts; that is, they are on duty during peak calling periods in the late morning and early evening and off duty during the intervening hours. Telephone companies normally assign shifts by seniority, allowing the most experienced operators first choice of schedules. As a result, entry-level operators may have less desirable schedules, including late evening, split-shift, and weekend work. Telephone company operators may work overtime during emergencies.

Approximately 1 in 5 communications equipment operators works part time. Because of the irregular nature of telephone operator schedules, many employers seek part-time workers for those shifts that are difficult to fill.

An operator's work may be quite repetitive and the pace hectic during peak calling periods. To maintain operator efficiency, supervisors at telephone companies often monitor operator performance, including the amount of time spent on each call. The rapid pace of the job and frequent monitoring may cause stress. To reduce job-related stress, some workplaces attempt to create a more stimulating and less rigid work environment.

Employment

Communications equipment operators held about 339,000 jobs in 2000. About 3 out of 4 worked as switchboard operators. Employment was distributed as follows:

Switchboard operators	259,000
Telephone operators	54,000
All other communications equipment operators	26,000

Most switchboard operators worked for services establishments, such as personnel-supply services, hospitals, and hotels and motels.

Training, Other Qualifications, and Advancement

Communications equipment operators receive their training on the job. At large telephone companies, entry-level central office and directory assistance operators may receive both classroom and on-the-job instruction that can last several weeks. At small telephone companies, operators usually receive shorter, less formal training. These operators may be paired with experienced personnel who provide hands-on instruction. Switchboard operators also may receive short-term, informal training, sometimes provided by the manufacturer of their switchboard equipment.

New employees train in equipment operation and procedures designed to maximize efficiency. They are familiarized with company policies, including the expected level of customer service. Instructors monitor both the time and quality of trainees' responses to customer requests. Supervisors may continue to closely monitor new employees after their initial training session is complete.

Employers generally require a high school diploma for operator positions. Applicants should have strong reading, spelling, and numerical skills; clear speech; and good hearing. Computer literacy and typing skills also are important, and familiarity with a foreign language is helpful because of the increasing diversity of the population. Most companies emphasize customer service skills. They seek operators who will remain courteous to customers while working at a fast pace.

After 1 or 2 years on the job, communications equipment operators may advance to other positions within a company. Many enter clerical occupations in which their operator experience is valuable, such as customer service representatives, dispatchers, and receptionists. (See the *Handbook* statements on customer service representatives, dispatchers, and receptionists and information clerks.) Operators with a more technical background may advance into positions installing and repairing equipment. Promotion to supervisory positions also is possible.

Job Outlook

Employment of communications equipment operators is projected to decline through 2010, largely due to new laborsaving communications technologies and to consolidation of telephone operator jobs into fewer locations, often staffed by personnel-supply services firms. Virtually all job openings will result from the need to replace communications equipment operators who transfer to other occupations or leave the labor force.

Developments in communications technologies, specifically the ease and accessibility of voice recognition systems, will continue to have a significant impact on the demand for communications equipment operators. The decline in employment will be sharpest among directory assistance operators; smaller decreases will occur for switchboard operators. Voice recognition technology allows automated phone systems to recognize human speech. Callers speak directly to the system, which interprets the speech and then connects the call. Because voice recognition systems do not require callers to input data on a telephone keypad, they are easier to use than touch-tone systems. The systems also can understand increasingly sophisticated vocabulary and grammatical structures; however, many companies will continue to employ operators so that those callers having problems can access a "live" employee, if desired.

Electronic communications through the Internet or e-mail, for example, provides alternatives to telephone communications and requires no operators. Internet directory assistance services are reducing the need for directory assistance operators. Local phone companies currently have the most reliable phone directory data; however, Internet services provide information such as addresses and maps, in addition to phone numbers. As telephones and computers converge, the convenience of Internet directory assistance is expected to attract many customers, reducing the need for telephone operators to provide this service.

Consolidations among telephone companies also will reduce the need for operators. As communications technologies improve and long-distance prices fall, telephone companies will contract out and consolidate telephone operator jobs. Operators will be employed at fewer locations and will serve larger customer populations.

Earnings

Median hourly earnings of switchboard operators, including answering service, were $9.71 in 2000. The middle 50 percent earned between $8.02 and $11.71. The lowest 10 percent earned less than $6.87, and the highest 10 percent earned more than $13.76. Median hourly earnings in the industries employing the largest numbers of switchboard operators in 2000 are shown below:

Offices and clinics of medical doctors	$9.74
Hospitals	9.54
Hotels and motels	9.16
Personnel supply services	9.02
Miscellaneous business services	8.66

Median hourly earnings of telephone operators in 2000 were $13.46. The middle 50 percent earned between $9.40 and $16.76. The lowest 10 percent earned less than $7.23, and the highest 10 percent earned more than $19.57.

Some telephone operators working at telephone companies are members of the Communications Workers of America (CWA) or the International Brotherhood of Electrical Workers (IBEW). For these operators, union contracts govern wage rates, wage increases, and the time required to advance from one pay step to the next. (It normally takes 4 years to rise from the lowest paying, nonsupervisory operator position to the highest.) Contracts also call for extra pay for work beyond the normal 6-1/2 to 7-1/2 hours a day or 5 days a week, for Sunday and holiday work, and for a pay differential for nightwork and split shifts. Many contracts provide for a 1-week vacation after 6 months of service; 2 weeks after 1 year; 3 weeks after 7 years; 4 weeks after 15 years; and 5 weeks after 25 years. Holidays range from 9 to 11 days a year.

Related Occupations

Other workers who provide information to the general public include dispatchers; hotel, motel, and resort desk clerks; information and record clerks; and reservation and transportation ticket agents and travel clerks.

Sources of Additional Information

For more details about employment opportunities, contact a telephone company, temporary-help agency, or write to:

➤ Communications Workers of America, 501 3rd St. NW., Washington, DC 20001. Internet: **http://www.cwa-union.org**

➤ International Brotherhood of Electrical Workers, Telecommunications Department, 1125 15th St. NW., Room 807, Washington, DC 20005.

Computer Operators

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Significant Points

- Employment is expected to decline sharply due to advances in technology.
- Opportunities will be best for operators who have formal computer-related education, are familiar with a variety of operating systems, and keep up-to-date with the latest technology.

Nature of the Work

Computer operators oversee the operation of computer hardware systems, ensuring that these machines are used as efficiently as possible. They may work with mainframes, minicomputers, or networks of personal computers. Computer operators must anticipate problems and take preventive action, as well as solve problems that occur during operations.

The duties of computer operators vary with the size of the installation, the type of equipment used, and the policies of the employer. Generally, operators control the console of either a mainframe digital computer or a group of minicomputers. Working from operating instructions prepared by programmers, users, or operations managers, computer operators set controls on the computer and on peripheral devices required to run a particular job.

Computer operators usually receive on-the-job training.

Computer operators load equipment with tapes, disks, and paper, as needed. While the computer is running—which may be 24 hours a day for large computers—computer operators monitor the control console and respond to operating and computer messages. Messages indicate the individual specifications of each job being run. If an error message occurs, operators must locate and solve the problem or terminate the program. Operators also maintain logbooks or operating records, listing each job that is run and events, such as machine malfunctions, that occur during their shift. In addition, computer operators may help programmers and systems analysts test and debug new programs. (See the statements on computer programmers; and systems analysts, computer scientists, and database administrators elsewhere in the *Handbook*.)

As the trend toward networking computers accelerates, a growing number of computer operators are working on personal computers (PCs) and minicomputers. In many offices, factories, and other work settings, PCs and minicomputers are connected in networks, often referred to as local area networks (LANs) or multiuser systems. Whereas users in the area operate some of these computers, many require the services of full-time operators. The tasks performed on PCs and minicomputers are very similar to those performed on large computers.

As organizations continue to look for opportunities to increase productivity, automation is expanding into additional areas of computer operations. Sophisticated software, coupled with robotics, enables a computer to perform many routine tasks formerly done by computer operators. Scheduling, loading and downloading programs, mounting tapes, rerouting messages, and running periodic reports can be done without the intervention of an operator. Consequently, these improvements will change what computer operators do in the future. As technology advances, the responsibilities of many computer operators are shifting to areas such as network operations, user support, and database maintenance.

Working Conditions

Computer operators generally work in well-lighted, well-ventilated, comfortable rooms. Because many organizations use their computers 24 hours a day, 7 days a week, computer operators may be required to work evening or night shifts and weekends. Shift assignments usually are made based on seniority. However, increasingly automated operations will lessen the need for shift work, because many companies let the computer take over operations during