Processing and Resolving the Incident

Objectives

After reading this chapter, you will be able to:

1. List the five steps in the problem-solving process.
2. Discuss the importance of collecting appropriate data.
3. Describe the techniques used to determine the root cause of a problem.
4. Explain why creativity plays an important role in problem solving.
5. List the three methods used to evaluate and prioritize possible solutions.
6. Identify several criteria used to determine a plan of action.
7. Explain the responsibilities of a problem owner.
8. Discuss the importance of notification.
9. List five common reasons that problems are escalated.
10. Describe three types of difficult users.
11. List the three components of problem resolution.
12. Discuss the benefits of accurately documenting calls.

Chapter Overview

Chapter 3 discussed the procedures that a help desk analyst should follow when receiving an incident. Once a call has been received, the next step in the incident management process is to develop a solution to the problem. Most user problems are not difficult to resolve, mainly because in all likelihood the help desk has solved the same or a similar problem in the past. Other problems are more complicated and require problem solving. This chapter describes the problem-solving process and several of the techniques that help desk analysts use to solve problems.

4.1 Step 1: Identifying the Problem

Problem solving is a process used to arrive at a solution to a difficult or disruptive situation. There are five steps in the problem-solving process:

1. Identifying the problem
2. Determining the problem's root cause
3. Generating options
4. Evaluating and prioritizing options
5. Determining a course of action

The most common reason that a problem is not solved is misidentification of the problem itself. Many times a symptom of a problem is mistaken for the problem.

If the information collected during the first step of the problem-solving process is not complete or accurate, the solution will be ineffective. This is the meaning of the computer slogan "garbage in, garbage out." The solution to a problem is only as good as the information it is based on.

For example, suppose a user reports that a printer is not working. The help desk analyst who receives the call asks all kinds of questions about the printer, but none about the user's computer. Eventually, it is determined that the problem is a corrupt printer driver on the user's computer. The analyst mistakenly focused on the printer when the problem was in the computer itself. This scenario illustrates the idea that arriving at an effective solution is possible only when the right questions are asked to obtain all the necessary information—even information that may not seem immediately relevant to the user's problem.

In the first step of the problem-solving process, information is collected about the user and the problem.

Collect Data

User data—information about the user—can include the user's name, title, department, and hardware and software configuration. Much of this information may already be stored in a database, so gathering data may just be a matter of confirming that no information has changed since the user's last call. If user configuration data are not stored electronically, this information must be obtained from the caller over the telephone or via the computer.

Problem data—information about the problem itself—can include

1. *Component affected*: The particular piece of hardware or software that is not working as it should.

2. *Symptom*: The disturbance that causes the user to know that a problem exists.

3. *Date and time problem first occurred*: Information needed to determine whether any major changes were made to the system or component around the time the user realized that he or she had a problem.

4. *Description of problem*: A basic one or two sentence statement of the problem as well as a detailed description. An example of a basic problem description is "When user logs onto the network, error message XYZ is displayed." A detailed description of this problem states

   - What the user was doing when the problem occurred (double-clicked network shortcut icon on desktop)
   - What actually happens when the user performs this activity (error message XYZ is displayed)
   - What the user expected to happen (to successfully log onto the network)
   - When the problem happens (for example, only under certain conditions, only at certain times of the day, every time)

Rule Out the Obvious

Many computer problems are easily solved because the solution is an obvious one. Before moving on to more complex problem-solving techniques, it is important to consider the obvious by asking questions such as

- Is everything plugged in?
- Is everything turned on?
- Does rebooting solve the problem?

Once the obvious solutions have been ruled out, the next step is to determine whether a solution exists in the help desk knowledgebase. (The topic of knowledgebases is discussed in Chapter 8.) If a problem was reported to the help desk by another user in the past, a description of the problem and the steps required to solve it should be recorded. The information that is stored about problems and solutions is a great source of knowledge for help desk analysts. This is the major reason for keeping accurate, detailed call records. Call records used to be stored in paper files, but today most companies store them electronically.

✓ **READING CHECK**

1. **READING REVIEW** Identify the most common reason that problems are not solved.

2. **CRITICAL THINKING** During the first phase of problem solving, a help desk analyst collects information about what?

4.2 Step 2: Determining the Cause of the Problem

If information exists about a problem and its solution, in most cases the problem can be solved rather quickly. However, not every problem has a history. When a call comes into the help desk and the problem is a new one, the analyst must work to determine what is causing the problem, and then generate probable solutions. Strategies that can be useful in this process are

- Open-ended and closed-ended questions
- Replication
- Root cause analysis

Open-Ended and Closed-Ended Questions

Just as doctors do when examining a patient with general symptoms, analysts must learn to ask additional questions to narrow down the problem diagnosis. Effective diagnosis requires the use of open-ended and closed-ended questions.

Closed-ended questions can be answered with a simple answer or a yes or no. They are very useful when gathering the basic facts surrounding the problem. Examples of common closed-ended questions are

- Does the computer turn on?
- Is everything plugged in?
- What applications do you have running?
- Have you tried rebooting?
- Is anyone else experiencing the problem?

By using closed-ended questions, analysts gain an overall picture of the situation in a very short time. Often, however, this information is not sufficient for determining the cause of the problem. This is when open-ended questions can be used effectively. **Open-ended questions** are questions that cannot be answered with a yes or no; an explanation is required. These questions have the potential to reveal significant clues for solving the problem. Open-ended questions also provide an opportunity to assess the user's technical knowledge and comfort level by listening closely to the user's use (or lack of use) of technical terms or computer jargon.

In a help desk environment, the following open-ended questions are useful in diagnosing user problems.

1. *Who?* Who is affected? Who is not affected?
2. *What?* It is also helpful to find out what the user was doing when he or she first became aware of the problem. With this information,

the help desk analyst may be able to recreate the steps leading up to the problem, which may provide some clues.

3. *What?* Finding out what the user was doing before the problem occurred can sometimes aid in solving the problem. In some cases, the user may have noticed something different before the problem started. On the other hand, the problem may have come about because of an action the user took, such as deleting files.

Some questions that may help an analyst learn what the user was doing include

- What error message did you receive?
- What is on the screen right now?
- What program were you using?
- What programs do you currently have running?
- What were you doing when the error occurred?
- What (if any) changes were made to your computer recently?

4. *When?* Time and date are important because the user may be unaware of other things occurring at the time of the problem, such as network maintenance and system patches. If the analyst is able to determine that the problem began when the network software was updated, it will be easier to track down the cause of the problem.

To help pinpoint the time of the incident, an analyst can ask the following questions.

- When did the problem begin?
- How often does it occur?
- When does it occur most often? Least often?
- Has it ever happened before?

5. *Why?* Once the who, what, where, and when information is collected, the job of the help desk analyst is to find the answer to the question

- Why is this happening?

Go to

Audio Exercise 4.1

Listen to Audio Exercise 4.1 on the CD in the back of this book. Then, answer the questions below.

1. Has the rep been effective?
2. What kinds of questions could the rep have asked to obtain more information?

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Computer Practice 4.1 — Add a New Problem Type

Complete the following exercise using the HelpSTAR software that is on the CD in the back of the book. *Note: The password for all of the sample users in these exercises is 'helpstar'.*

1. Start HelpSTAR.
2. Login as Beth Markham.
3. Select *Administration › Problem Type › New Problem Type* from the main menu. The 'New Problem Type' dialog box will appear.
4. Enter ***Software – Accounting*** in the 'New' field.
5. Click the 'Save' button. A message will be displayed to indicate that the problem type has been added.
6. Click the 'No' button when prompted to add another problem type.
7. Confirm that the new problem type has been added.
8. Select *Administration › Problem Type › List Problem Types* from the main menu. The 'List All Problem Types' window will be displayed.
9. Locate the newly added problem type in the list.
10. Do not exit HelpSTAR.

Computer Practice 4.2 — Create a New Queue

Complete the following exercise using the HelpSTAR software that is on the CD in the back of the book. *Note: The password for all of the sample users in these exercises is 'helpstar.'*

1. Select *Administration › Queue › New Queue* from the main menu.
2. Enter ***Wireless Networking*** in the 'New' field.
3. Click the 'Save' button.
4. A message will appear to indicate that the queue has been added.
5. Click the 'OK' button.
6. When prompted to add another queue, click the 'No' button.
7. Confirm that the queue has been added.
8. Select *Administration › Queue › List Queues* from the main menu. The 'List All Queues' window will be displayed.
9. Ensure that the newly added queue is displayed in the list.
10. Close any open windows.

Computer Practice 4.3 — Assign a Queue to Support Reps

Complete the following exercise using the HelpSTAR software that is on the CD in the back of the book.

1. Start HelpSTAR.
2. Login as Beth Markham.
3. Select *Administration > Queue Assignment > Queue to Rep* from the main menu.
4. The 'Assign Queues to Support Rep' dialog box will be displayed.
5. Select 'Wireless Networking' from the drop-down list of queues.
6. Select "John Keyser" from the list of support reps and click the 'Assign' button. His name will be removed from the 'Available' list and appear on the 'Assigned' list.
7. Select "Sandra Liu" from the list of reps and click the 'Assign' button.
8. Click the 'Save' button. A message will appear stating that the queue assignments have been updated and the dialog box will close.
9. Close any open windows.

Replication

If a problem can be replicated, it is easier to identify the cause. **Replication** refers to the process of deliberately taking steps to recreate a problem. For example, suppose a user states that her computer froze when she tried to start *Microsoft Excel* this morning. A help desk analyst may ask how she was trying to start *Excel*, and then may ask her to follow the exact same procedure. Sometimes an analyst will attempt to replicate a problem on a different computer to try to isolate possible causes. If the problem occurs on one computer and not the other, the analyst can examine the configurations of the two computers to determine what is different. Most likely one of the differences is the cause of the user's problem.

Many help desks use remote access software programs that allow them to "see" what is happening on the user's computer while the user tries to replicate the problem. These programs will be described in more detail in Chapter 6.

Some problems cannot be replicated. Most people have had this experience when taking a car in for repair. The owner reports that the car hesitates at speeds over 50 miles per hour. When the mechanic takes the car out for a test drive, there is no hesitation. The problem is more difficult to solve because the mechanic is unable to observe it directly. The same is true for the help desk. If a user cannot duplicate the problem, it will be harder for the analyst to pinpoint the source of the problem. Problems that occur sometimes but not all the time are referred to as **intermittent problems**. Intermittent problems are usually more difficult to eliminate than problems that occur every time an action is performed.

Root Cause Analysis

In an effort to solve user problems as rapidly as possible, some help desk analysts eliminate the symptoms of a problem but not the underlying cause. However, unless the root cause is identified and eliminated, the problem will recur. A familiar example is the case of a tire that has a slow air leak. Stopping by the service station to add air every few days takes away the symptom—low air pressure in the tire. However, adding air does nothing to eliminate the problem. To stop the problem from happening in the first place, it is necessary to determine its root cause—in this case, the reason the tire is losing air.

Root cause analysis is a process that can be used to identify the underlying factors that are causing a problem. The root cause is the source of the problem at its most basic level. If the root cause is eliminated, the problem will not recur.

In root cause analysis, there are three steps of information processing.

1. Identify cause areas.
2. Identify underlying causes.
3. Identify root causes.

To get to the root cause of a problem, you must keep asking the question "why." When there are no more "why" questions to be asked, you have arrived at the root cause. The following example illustrates the process as it is used to determine why a neighbor's home computer will not turn on.

1. Identify cause areas.

Problem: Why will the computer not turn on?

Possible causes: no electricity, unplugged cord, wall switch is not turned on

If the problem is that the cord is unplugged or the wall switch is not turned on, the solution is obvious. However, if the problem is lack of electricity, then additional levels of analysis are required to determine the root cause—why there is no electricity. Identifying the cause of the problem as a lack of power suggests nothing about the root cause of the problem.

2. Identify underlying causes.

Problem: Is the power outage isolated to this house, or is power out in the whole neighborhood?

Possible causes: If the power outage is in the entire neighborhood, the solution is to call the utility company and report the outage. If the problem is that this house has no power, but the rest of the houses in the neighborhood have power, additional analysis must take place to determine the root cause.

3. Identify root causes.

Problem: Why is power out in this house?

Possible causes: outside line to house is down or damaged, circuit breaker is switched off, utility bill is not paid

Fishbone Diagrams

A **fishbone diagram** is a graphic representation used to identify all possible causes of a situation. It shows the relationships between processes and solutions. A fishbone diagram is also a useful tool for identifying root causes (see Figure 4.1).

You create a fishbone diagram by following these steps:

1. Draw a straight line on a blank piece of paper. This line is the "bone."

2. Write a problem statement at the end of the "bone."

3. List potential causes along the top and bottom of the "bone" by drawing lines at a 45 degree angle above and below the straight line. Generate as many alternatives as possible.

4. If a cause has subcauses, draw branches off the cause line to represent them.
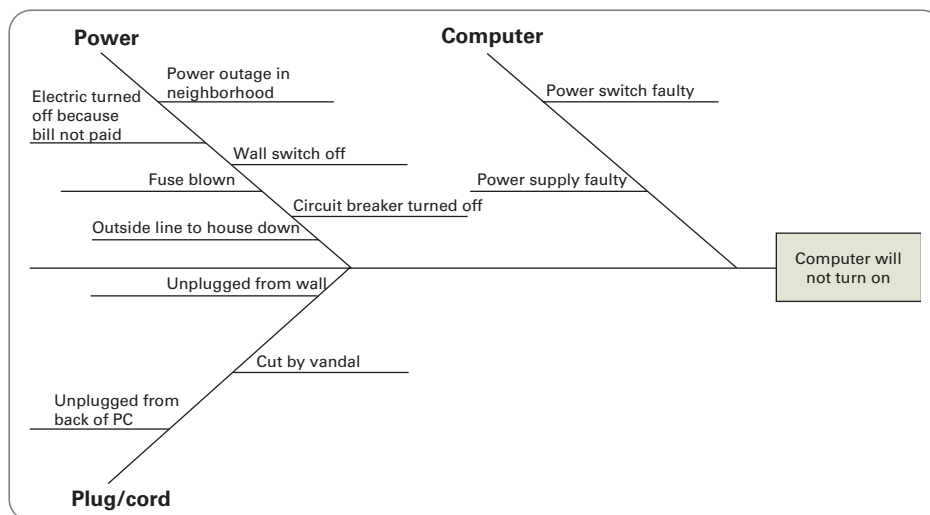
FIGURE 4.1

A sample fishbone diagram

Once all the causes and subcauses have been listed, each one is examined closely as a possible root cause. They can be ranked from most probable to least probable. The top two or three causes are then pursued.

✓ **READING CHECK**

1. **READING REVIEW** Explain the difference between an open-ended question and a closed-ended question.

2. **CRITICAL THINKING** Explain why is it important to identify the root cause of a problem. Summarize the process of identifying a problem's root cause.

4.3 | Step 3: Generating Options

Effective problem solving requires the use of the left and right sides of the brain. The **left brain** excels at rational and analytical thinking; it also processes language. When following a set of logical steps to solve a problem, the left side of the brain is being used.

When this technique is applied and no satisfactory solution is identified, a right-brain approach may be needed. The **right brain** processes incoming colors, sounds, and patterns; it processes incoming information in a holistic manner. Using the imagination and daydreaming are right-brain activities. It follows, then, that the right brain would be the source of creativity.

To process incoming information and solve problems, both parts of the brain must be used. During the information gathering and diagnosis steps, the left brain plays a dominant role. When it is time to generate solutions, the right brain is at work. See Figure 4.2 for a list of left-brain and right-brain activities.

Right-brain and left-brain activities

Left Brain Activities	Right Brain Activities
Sequential Thinking	Insight
Sees Details	Imagination
Logical: Cause & Effect	Face Recognition
Language Functions/	Spatial Orientation
Grammar Rules	Drama
Uses Facts	Metaphor/Poetry
Speaks Well	Music
Good With Numbers	Meditation/Prayer
Word Puzzles	Rap/Rhyme
Analyzes	Art/Colors
Names Things	

Sometimes solving a problem requires creative thinking. Approaching the same situation from a different viewpoint can lead to new insights. Creativity requires the suppression of rigid ideas about what might and might not work in a given situation. When thinking creatively, there are no right and wrong answers. The idea is to move outside the usual routines so that fresh ideas can enter in. Brainstorming and thinking outside the box are two creative approaches that can be applied to problem solving in a help desk environment.

Brainstorming

Brainstorming is a group technique that results in creative solutions to a problem. In brainstorming, the idea is to develop as many solutions as

possible without judging them. During the process, group members are encouraged to think of unusual ideas and approaches to the problem. When a person is trying to come up with new ideas by brainstorming, the right brain is being used.

When brainstorming, a group states possible solutions to a problem as quickly as possible, without stopping to analyze each idea. A member who has been appointed leader records each suggestion on a large flipchart or blackboard. All suggestions are listed, no matter how far-fetched they might seem. For brainstorming to be effective, all judgment must be withheld. Once no more ideas are generated, the group reviews the ideas and selects those that seem most appropriate.

In a brainstorming session about the problem with the neighbor's computer, possible solutions listed could be

- Blown fuse
- Computer not plugged in
- Wall jack not functioning
- Thunderstorm knocked out power
- Mice chewed through power cord
- Power lines to house were cut

As this list illustrates, the first several ideas generated in a brainstorming session are usually the more obvious possibilities. As the brainstorming session continues, the suggestions become more creative.

Some guidelines for effective brainstorming include the following:

1. Work within a preset time limit.
2. Limit the size of the group to eight or fewer.
3. Include people with varying background and experience in the group.
4. Encourage unusual and improbable ideas.
5. Do not allow criticism or judgment of ideas.
6. Write down all ideas so others can see them and build on them.
7. Maintain a rapid pace.

Thinking Outside the Box

Most people attempt to solve problems by relying on their accumulated knowledge and experiences. Such tools are quite valuable during the problem-solving process. However, sometimes these past experiences limit a person's ability to see alternate solutions.

One example of thinking outside the box is the common nine-dot puzzle. Look at Figure 4.3. Can you connect all the dots by making only four straight lines and without lifting your pen from the paper?

Figure **4.3**

The Nine Dot Puzzle

The Nine Dot Puzzle

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• • •

• • •

Starting from any point, draw
continuous lines (without lifting the pen)
so that each of the nine dots has at least
one line running through it.

The solution is illustrated in Figure 4.4 on page 104.

Practice the list of suggestions below to develop creative outside-the-box thinking skills.

• Once you have an answer in mind, come up with a second answer that is also correct.
• Stimulate the right side of the brain by listening to music, working with colored pens and paper, or using another method of your choosing.
• Take on the perspective of a child. As adults, we sometimes overcomplicate situations and miss the obvious.
• Look for relationships among things that seem unrelated.

Computer Practice 4.4 — Search for a Standard Solution

Complete the following exercise using the HelpSTAR software that is on the CD in the back of the book.

1. Select *Search › Standard Solutions* from the main menu.
2. The 'Text Search – Standard Solution' dialog box will be displayed.
3. Enter ***desktop and shortcut*** in the 'Search Phrase' field.
4. Accept the default entries in the other fields.
5. Click the 'Find' button.
6. The 'Search Results – Standard Solutions' window will list all solutions containing the search phrase. Note the reference number assigned to the Standard Solution.
7. Click the 'View Standard Solution' button ( ).
8. The Standard Solution Detail window will open.
9. View the details of the solution.
10. Close any open windows.

- Deliberately come up with answers that seem far-fetched.
- Once you have an answer in mind, consider the opposite as a possible solution.
- Revisit ideas that have already been rejected.
- Explain the problem to a five-year-old child.

✔ **READING CHECK**

1. READING REVIEW In what part of the problem-solving process is the role of the left brain dominant? When is the right brain more important?

2. CRITICAL THINKING Briefly describe the brainstorming process and explain why it is effective for producing solutions to problems.

4.4 Step 4: Evaluating and Prioritizing Options

In the help desk environment, three primary approaches are used to evaluate possible solutions to a problem.

- Module replacement
- Hypothesis testing
- Configuration management

Module Replacement

When a problem is hardware-related, replacing components that might be causing the problem can often solve it. This approach is known as **module replacement**. Components can be removed one at a time and replaced with a module that is known to function. If the problem is eliminated after swapping out a component, the problem is likely a defective component. If the problem is not solved after replacing the part, the original part is reinstalled and another part is removed for module replacement. Similarly, software-related problems can often be remedied by uninstalling and reinstalling the program.

Hypothesis Testing

Hypothesis testing is the process of evaluating each possible solution through testing. The following example illustrates the hypothesis-testing approach in action:

PROBLEM: The neighbor's computer does not turn on.

HYPOTHESIS 1: Power is out to the entire house.

After turning on a light in the kitchen successfully, the next hypothesis is tested.

HYPOTHESIS 2: A fuse has blown.

After checking for a blown fuse and not finding one, the next hypothesis is tested.

HYPOTHESIS 3: The cord has come unplugged from the wall socket.

After checking and finding that the computer is plugged into the wall socket, the next hypothesis is tested, and so on until the problem is solved.

9 Dot Puzzle Solution

| FIGURE | 4.4 |

Solution to the Nine Dot Puzzle
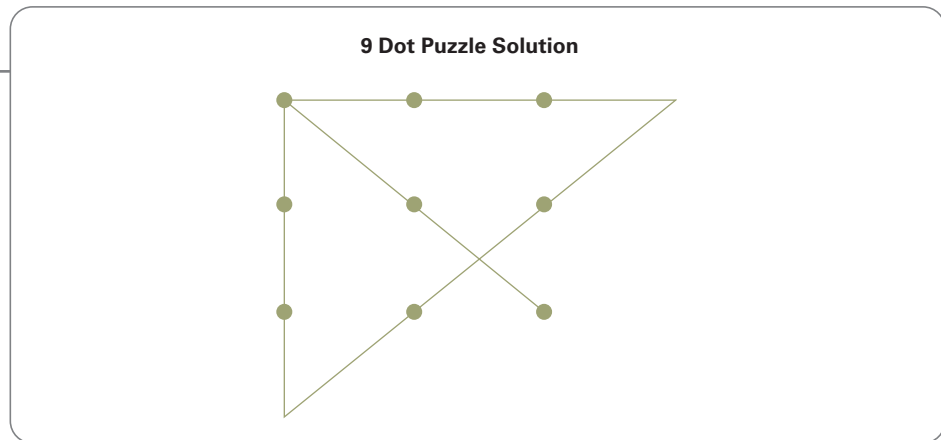
Configuration Management

Sometimes it is difficult to determine whether a problem lies within a particular piece of hardware or software, or whether the problem is the result of its interaction with other devices or programs. For example, in corporate settings, computers are usually hooked up to a network that consists of many wires, switches, and hubs. A software program may also crash only when running at the same time another program is launched.

To solve these types of problems, help desk analysts often revert to a basic configuration. This reversion may include disconnecting the computer from a network, a printer, or other peripheral devices. If the problem seems to be software-related, the user's computer may be rebooted with only those programs running that are necessary to start the computer. Once the computer has been restarted, programs are added back to the configuration one at a time until the culprit is found. While somewhat labor intensive and time consuming, this method can be used to determine the cause of a problem if other methods have failed.

1. **READING REVIEW** What are the three primary approaches to evaluating solutions to problems?

2. **CRITICAL THINKING** Explain why a help desk analyst might decide to revert to the basic configuration of a user's computer.

4.5   Step 5: Determining a Course of Action

After identifying the most likely cause of the problem and its solution, an action plan is developed. An **action plan** lists the steps required to solve the problem as well as a timetable for implementation. In a help desk setting, a primary action plan is developed for the most probable solution. One or two alternative action plans are created in the event that the primary solution does not eliminate the problem.

Decision Making

To determine which action plan is primary, an analyst must make a decision about which solution has the greatest likelihood of being successful. **Decision making** is the process of choosing among a number of alternatives. It is a necessary step in the problem-solving process and is used to select the best option once a number of solutions have been generated. Without decision-making skills, a help desk analyst would not be able to solve problems, since it would not be possible to determine which solution should be implemented.

Help desk decisions are based on a set of criteria. The criteria vary according to a particular situation. However, some of the issues considered when solving user problems are

- How quickly a solution can be implemented
- Resources available to implement the solution
- Cost of proposed solution
- Likelihood of eliminating the root cause of the problem

✓ **READING CHECK**

1. **READING REVIEW** List the components of an action plan.

2. **CRITICAL THINKING** Summarize and explain the criteria that help desk analysts use for making decisions.

4.6 Problem-Solving Challenges

Problem solving requires more than just knowing the techniques; it also requires certain personal qualities. The act of solving a problem can be frustrating when more and more time is devoted to the problem and no solution becomes evident. Hours can be spent trying to correct a situation that, as it turns out, is not the cause of the problem. At this point, an analyst may need to start the process all over. The analyst must find effective methods of handling frustration. This is discussed in more detail in Chapter 10.

Stressful Situations

The problem-solving process can also be stressful. For example, consider a situation in which a senior executive is unable to finalize a report due by the end of the day because he needs sales figures from all regions, and the network link to Asia is down. Stress is, unfortunately, a recurring problem for help desk personnel. Chapter 10 explores ways of minimizing stress in the help desk environment.

Diverse User Base

Finally, problem solving involves the challenge of interacting with a variety of people, each with his or her own personality and communication style. Some users will be courteous, while others may be anxious or angry. To be an effective problem-solver, an analyst must be patient both with the user and with himself or herself. Some users may seem to take forever to answer a question. Others may not be familiar with technical terms that seem very basic to an experienced analyst. Still others may not be skilled in communicating the nature of the problem. Despite the particular qualities of the user, the analyst must always be patient and calm. There is no room in the analyst-user interaction for impatience or annoyance on the part of the problem-solver.

Effective problem solving is partly a science and partly an art. While a logical series of steps must be followed to define the problem and determine the cause, creativity is required to generate and implement solutions.

✓ **READING CHECK**

1. **READING REVIEW** Identify two personal characteristics needed by help desk analysts.

2. **CRITICAL THINKING** Give an example of a frustrating situation that a help desk analyst might encounter.

HELP *desk* Careers

A University's Help Desk

The University of Tennessee at Chattanooga (UTC) has a help desk that assists members of the faculty and staff by

- Installing and supporting software

- Troubleshooting computing problems

- Upgrading and performing minor repairs on computers and related hardware

- Providing information that helps people at the university use technology and solve problems on their own

In addition to fielding telephone calls from users, UTC help desk analysts make "house calls," or visits to users' offices, when needed. All help desk personnel are expected to write down every action they take in dealing with users' problems and requests. This process aids the UTC technical support group's effort to collect information it needs to keep abreast of computing trends and challenges as they develop.

Like most help desks, the one at UTC receives a heavier volume of calls at some times than at others. Have you ever wondered what desk analysts do when they have no calls to handle? UTC has suggestions for how its help desk analysts can use their time productively when calls are light and they are not working on user problems. Among the suggestions are the following.

- Check the help desk's e-mail account, and enter any e-mailed service requests into the help desk's database.

- Check the service kits that help desk personnel use on "house calls," and organize and restock them as needed. These kits include standard tools and supplies such as Ethernet cables, boot disks, and software setup CDs.

- Check the laptop computers that the help desk lends to users to ensure that they are all accounted for and stored properly, that they have all their accessories, and that they contain only the software and files they are supposed to contain.

- Help keep the help desk's workspace clean and orderly.

- Learn new applications and skills by taking computer-based tutorials, studying books or manuals, and doing research on the Internet.

- Practice installing software and repairing hardware on surplus computers that the help desk keeps for this purpose.

- Reformat and organize blank diskettes for use by the help desk.

Although UTC encourages its help desk analysts to practice and improve their technical skills, it maintains that the best analysts are not necessarily those with the best technical skills. The most important attributes of a help desk analyst are a willingness to take the initiative and keep learning, a friendly attitude toward users, and a mature and professional outlook.

Go to the UTC Web site (www.utc.edu) and locate information on the help desk. Review the information provided.

Exploring Careers

1. List four tasks that UTC help desk analysts are encouraged to perform when calls are light.

2. In your opinion, is it fair to expect help desk analysts to perform tasks other than helping users, such as cleaning the workspace and reformatting blank diskettes? Write a paragraph explaining your point of view.

4.7   Problem Ownership

Throughout the problem-solving process, a help desk employee must retain ownership of a problem. The idea behind ownership is that one person takes responsibility for seeing the problem through from beginning to end. A major part of owning a problem is providing the user with regular status updates. Some users are more patient than others. However, all users want to know that someone is working on their problem every minute. Without knowing that a person is responsible, a user may feel that the problem has been lost or, worse, that the problem is being ignored.

Obviously some problems take more time to solve. The key to handling these problems effectively is to communicate regularly with the user regarding the status of the problem. The more users are kept informed, the less likely they are to become dissatisfied and complain.

Responsibilities

In most companies, the person with ownership is responsible for communicating regular updates to the user, even if the problem has been escalated or referred to another person. In other companies, ownership changes when a problem is escalated to another person on the help desk.

The problem owner does more than track the progress of the incident and report back to the user. The owner is an advocate for the customer. Part of owning a problem involves working to get it solved on behalf of the user. Once the user places the initial call, he or she should not find it necessary to call the help desk a second time about the same problem. It is up to the problem owner to see the problem through to a satisfactory resolution.

Responsibilities of a problem owner include the following.

- Regular communication with the user regarding problem status
- Continual tracking of the problem, including who is working on it and what progress has been made
- Ensuring that the problem does not get lost or neglected
- Ensuring that the problem has been resolved to the user's satisfaction
- Entering resolution information in the database
- Closing the ticket

Successful problem solving depends on active problem ownership. If each problem does not have an analyst in charge, the problem may not be resolved in a timely manner.

Computer Practice 4.5 — Updating a Request

Complete the following exercise using the HelpSTAR software that is on the CD in the back of the book.

1. Select *Service Requests > My Workspace > In Service* from the main menu.
2. Click the 'Find' button.
3. The 'My Workspace – In Service (I'm the Support Rep) – All' window will be displayed.
4. Select the "Shortcut Not Working" request from Renya Torres.
5. Click the 'Update Service Request' button (⬚). The 'Update Request' window will open.
6. Enter the following text in the memo field: *Sales system is installed to network location. Emailed Standard Solution #5 to the user, awaiting response.*
7. Click the 'Save' button.
8. Click the 'Refresh' button (⟳) to view your changes in the preview pane.
9. Close any open windows.

Notification

In addition to updating a user about a problem's status, the problem owner is also responsible for notifying other relevant parties. **Notification** is the process of informing others about a problem. Information must be shared with other help desk personnel for a number of reasons. Another analyst may be on the phone with a user who is experiencing the same problem. If all analysts are aware of problems currently being worked on, joint problem solving is possible. This may result in quicker resolution. If a number of users call in with the same problem at the same time, notification alerts the help desk staff that they are dealing with a more widespread problem than one affecting a single user. Many times, problems affecting multiple users receive higher priority than a problem that is disturbing only a single user. If help desk analysts do not notify each other of the problems they are working on, it would be impossible to know whether the problem was confined or widespread.

Some problems must be reported to help desk management. Companies have different policies about when problems should be reported to management. In some instances, all problems that are not resolved within a specific time (such as 8 hours) must be reported. Most organizations require notifying management immediately when a significant problem, such as a system outage, is affecting a large number of users. If managers are aware of the problem, they have the option of assigning additional staff members

to it. Management should also be notified when a user is not satisfied with the service provided by the help desk. This will be discussed later in the chapter.

Notification takes place by phone, e-mail, paging, or other methods as dictated by the personnel involved and the severity of the problem. Critical problems (those affecting many users and/or a key business area) should be reported by the most efficient method. In most cases this is in person or by telephone. E-mail is not appropriate for urgent problem notification; it is commonly used to notify the appropriate parties when a problem is assigned a lower priority.

✓ READING CHECK

1. **READING REVIEW** Explain the idea behind ownership of a problem.

2. **CRITICAL THINKING** List the responsibilities of the help desk analyst who owns a problem, and explain why it is critical for an analyst to fulfill these responsibilities.

4.8 | Escalating Problems

All help desk analysts, regardless of their level of experience, encounter some problems that they cannot solve. While the optimal choice is to solve all problems at the first level, the reality is that some problems must be transferred before a solution can be found. Problems may be transferred to someone at a higher level within the help desk or in a specialty area such as network support, or even to an outside vendor. Escalation is the transfer of a problem to a higher level of support.

While to some it seems like admitting defeat to hand off a problem, it is actually in the best interests of the user and the help desk to do everything necessary to see that the problem is resolved in a timely manner. It is counterproductive for an analyst to spend too long on any one problem, and it is also counterproductive for a user to wait too long for an answer. For this reason, help desks establish policies about how long a problem can stay with an analyst before it must be transferred. These policies are designed to ensure that problems are handled efficiently.

For example, a company may have a policy that if the first level cannot solve a problem in 20 minutes, it must be escalated to the second level. This works to prevent a first-level analyst from spending too much time on a problem that he or she is unable to resolve quickly. There are exceptions, of course. If, after working on a problem for 20 minutes, an analyst believes that a solution is just a few minutes away, he or she may use discretion and decide to work past the 20 minute time limit. This should be exercised with caution. Management reviews reports on a regular basis. If

they notice that an analyst is holding a number of problems beyond 20 minutes and then escalating them anyway, management may review policies with the analyst. Some common reasons for escalation are shown in Table 4.1.

Problem has not been solved within the preset time frame
User reported problem and has not heard back from the help desk
Problem is serious and time critical
Problem is worsening—more than one user is affected
User has a high-level position in the corporation
User feels analyst is talking down to him or her
User cannot understand analyst (e.g., analyst uses technical jargon, has accent)

TABLE 4.1

Common Reasons for Escalation

Escalation Policies

There are typically a number of issues regarding problem escalation that are spelled out in a formal policy, including

1. *Who can decide to transfer a problem?* In addition to the analyst who is working on the problem, most help desks also allow a call to be forcefully taken away from an analyst who is not willing to turn over the problem.

2. *When does escalation occur?* When escalation occurs depends on the nature of the problem and the priority of the call. For example, the policy may state that standard calls are escalated after a given time period, such as 20 minutes, while priority calls must be transferred immediately.

3. *How are problems escalated?* Specific procedures are established that specify the manner in which calls are transferred—by telephone, via e-mail—as well as the information that must be passed on. Enough information must be collected to provide the next level with ample background information on the call. This information should include

   - A clear description of the problem
   - Detailed information about the user and his or her computer configuration
   - The possible cause or causes of the problem
   - A list of causes that have been considered and ruled out
   - Actions taken thus far to diagnose and resolve the problem
   - The severity and priority level assigned to the call

4. *Who has ownership of a transferred problem?* Once a problem has been escalated, the first-level analyst may retain ownership of the

problem. If this is the case, the problem owner is responsible for obtaining regular updates from the second level and communicating this information to the user. In other instances, the new owner may be responsible for tracking the problem and communicating with the user. When a problem is referred to an outside department or vendor, the original analyst almost always maintains ownership of the problem.

Nontechnical Escalation

While most calls are escalated because the current problem owner cannot resolve them, some calls are escalated for nontechnical reasons. Most of these escalations are the result of customer dissatisfaction with the help desk. For example, a user might call to express frustration after a problem has gone unresolved for more than 24 hours. These calls are usually routed to management or to a special group within the help desk that responds to user complaints.

While many technical escalations cannot be avoided, the majority of nontechnical escalations can be prevented, since they are the result of poor customer service. Some analysts are so interested in pursuing a solution that they fail to acknowledge the human side of the situation. At the other end of the phone is a person who is unable to continue working as usual because of a problem. What is it like to be that person?

Many factors influence the customer's current feelings, including work and nonwork issues. Some of these factors may include the following:

- Is this the first problem the customer has had this week, or is it the latest in a string of computer problems?
- Is the problem interfering with a critical deadline?
- Was traffic particularly bad on the way to work?
- Did the customer get a good night's sleep?

Service complaints can also occur due to customer expectations. Users may expect the help desk analyst to do more than offer a solution. They may think that the support person is supposed to come to their desks and fix the problem. This is the reason help desks create Service Level Agreements (SLAs) that specify the details of services that the help desk provides. Even with an SLA in place, nontechnical escalations will occur.

✓ **READING CHECK**

1. **READING REVIEW** Explain why help desks limit the amount of time a problem can be assigned to one analyst.

2. **CRITICAL THINKING** Identify the cause of most nontechnical escalations, and analyze why nontechnical escalations occur.

Computer Practice 4.6 — Escalating a Service Request

Complete the following exercise using the HelpSTAR software that is on the CD in the back of the book.

1. Select *Service Requests › My Workspace › In Service* from the main menu.
2. The 'My Workspace – In Service (I'm the Support Rep) – All' window will be displayed.
3. Click the 'Find' button.
4. Select the "Shortcut not Working" request and click the 'Update Service Request' button (⬚). The 'Update Request' window will be displayed.
5. In the 'Forward to:' drop-down box, select 'Another Rep' and choose "John Keyser" from the list that appears.
6. Enter the following text in the memo field: *Solution # 5 did not work. Appears to be drive mapping issue, escalating to JK* .

   As the problem seems to have changed from a software issue to a network issue, change the 'Problem Type' from 'Software—Sales Application' to 'Networking' to ensure that the request is properly categorized.
7. Click the 'Save' button.
8. Click the 'Refresh' button (⟳) on the toolbar to refresh the window. The "Shortcut not Working" request should no longer be visible in your service as the request has been escalated to John Keyser.
9. Exit HelpSTAR.

4.9 Dealing with Difficult Users

The majority of help desk calls begin and end without incident. Most people who call are pleasant and eager to receive help. Likewise, most help desk staff members are capable and respectful when they try to troubleshoot problems. Occasionally a user will present a challenge to the analyst. Several types of difficult users are described in the following section, along with tips for handling the interactions.

The Angry Caller

Occasionally, calls are received from users who are angry—not necessarily at the help desk, but angry nevertheless. What is the best way to deal with an angry caller? Be prepared. Before a call comes in, there should be a plan in place for dealing with difficult users. This may be a formal procedure

listed in a policy manual or handbook, or it may be something new employees learn during orientation to the help desk.

One of the best ways of handling the caller's anger is to be silent. In other words, listen but do not respond except for an occasional comment that indicates that you are listening. For example, use phrases such as "I see" and "That must be very frustrating." Angry users want a response; they want to know that their anger is having an effect. If they get no response from the other person, most angry callers will run out of steam rather quickly, since they have no one to whom they can direct their anger. Think of the last time that you were very angry. Without someone else around, it is not likely that you ranted and raved for too long.

It is very difficult to stand by and remain silent when the person on the other end of the phone is angry. On the other hand, if the help desk analyst tries to defend himself or herself, or tries to argue with the caller, the anger could become worse. This outcome is an example of the saying, "don't add fuel to a burning fire." Even an attempt to reason with an angry user is not effective.

The best strategy is to remain quiet, listen, and give the person the opportunity to vent the anger. Once the person has finished speaking, it may be appropriate to empathize with the caller by saying something to indicate that you understand how he or she feels. For example, if a user is angry that the problem interfered with meeting an important deadline, you might say, "I can understand how angry that must have made you." Whatever you say, say it slowly and in a calm tone of voice. Speaking slowly also helps to turn down the pace of the conversation, as angry callers tend to speak rapidly.

Guidelines for dealing with angry users include the following:

- Let the caller speak; do not interrupt.
- Acknowledge the user's anger, do not ignore it.
- Remind yourself that you have done nothing to cause the person's anger, even though you may receive the brunt of it.
- Maintain a neutral, calm demeanor.
- Offer to help with the problem, just as you would with any other user.

Go to

Audio Exercise 4.2

Listen to Audio Exercise 4.2 on the CD in the back of this book. Then, answer the questions below.

1. Why was Bob so angry?
2. Was Bob's anger justified?
3. How could the rep have handled the interaction more effectively?

Audio Exercise 4.3

Listen to Audio Exercise 4.3 on the CD in the back of this book. Then, answer the question below.

1 How could the rep have handled this situation more effectively?

The Abusive Caller

If an angry caller should become abusive, steps must be taken right away to eliminate the abuse or terminate the call. The same goes for a caller who is not angry but who is verbally abusive.

What constitutes abuse in a help desk environment? Abuse can be derogatory remarks directed toward the analyst, or other remarks that make the analyst feel uncomfortable. The use of profanity that is directed toward a help desk employee is considered inappropriate in a professional environment. Negative comments about the analyst's color, race, age, or gender are always inappropriate and usually abusive. In addition, negative statements that reflect on the analyst's knowledge or ability may be abusive. For example, an abusive caller might say, "You have no idea what you are talking about. You don't have a brain in your head. And you think you can help me? Forget it. Let me talk to someone else." Other examples of abuse include harassment (frequent phone calls or e-mail messages from a user who is dissatisfied with the outcome of a problem) and threats (such as "I'm going to do everything to see that you are fired if you don't fix this computer now").

What should be done when a call becomes abusive? There is no need to continue trying to help a user who is abusive. Calmly tell the user that if the conversation continues in this tone, the call will be terminated. For example, you might say, "If you are going to continue speaking like this, I am going to end the call." At this point, users who really want help will stop, while those who are more interested in attacking you will continue to do so.

If the abuse continues after you have told the user that the behavior will not be tolerated, terminate the call and report the incident to the appropriate person in the department. It is possible that the user will call and complain about you, so it is wise to report all abusive incidents when they happen. Nothing may come of it, but at least the incident has been reported and documented. If another help desk employee reports a problem with the same user, someone from the help desk may speak to the individual about appropriate behavior when requesting service from the help desk.

Did You Know?

Who is responsible for the famous customer service quote, "Nobody ever won an argument with a customer"?

Answer: L. L. Bean

The Talkative User

Sometimes it may seem like a user is more interested in chatting than in finding a resolution to a problem. In reality, the problem must take priority, or else the user and the help desk analyst waste valuable time. When working with this type of caller, the analyst must take control of the call. Closed-ended questions can be quite effective when trying to focus a user on the problem. The following example illustrates the use of closed-ended questions.

USER: I can't seem to dial out to the Internet this morning.

ANALYST: What error message did you receive?

USER: Something about a TCP/IP error.

ANALYST: What is on your screen right now?

USER: Oh, a bunch of icons. Some are for programs, others are documents I use regularly, and some, well, and I'm not sure what they are. Do you have any idea what this one is—it looks like an arrow pointing to the right with a yellow flame going through it.

ANALYST: Let's focus on the problem you called about—you are unable to get on the Internet.

USER: Okay. You know lately I have noticed that when I am connected to the Internet, it is very slow. Someone from tech support recently installed a new sound card in my computer; do you think that would cause my slow Internet access?

ANALYST: Actually, I think for now we should take one problem at a time. Tell me exactly what you did when you tried to access the Internet this morning.

USER: Well, I was having my coffee when my wife called to say I left my cell phone at home. I did the same thing I do every morning—clicked the icon for Internet Explorer. By the way, I heard Netscape just came out with a new version of their browser—should I be using that instead of Explorer?

As the conversation continues, the analyst recognizes that she must take control of the conversation, or it will go on for hours. At this time,

she switches to closed-ended questions, in an attempt to focus the user on the current problem and minimize the chatter.

ANALYST: Did you check that all the cables are plugged in to the back of your computer

USER: No.

ANALYST: Please look at the back of your computer and see that everything is plugged in. Do you see cables that are not connected?

USER: No, unless you mean the phone line.

ANALYST: Are you sure it is a telephone line?

USER: Well, not exactly. It looks like one but it is a little bigger.

ANALYST: It sounds like the cable that connects you to the network has come unplugged.

The call ends soon after it is discovered that the Ethernet cable had come unplugged from the back of the user's computer. This example illustrates the value of using closed-ended questions when responding to users who spend time talking about issues other than the main problem.

✓ READING CHECK

1. **READING REVIEW** Should help desk analysts try to defend themselves against users' anger? Why?

2. **CRITICAL THINKING** What should a help desk analyst do if a user continues to be abusive?

Audio Exercise 4.4

Listen to Audio Exercise 4.3 on the CD in the back of this book. Then, answer the question below.

❶ What should the rep have done to guide the user toward providing the information needed to solve the problem?

Go to

HELP *desk* in Action

Dealing with Difficult Users

Angel Reese, a first-level help desk analyst for Huron Insurance Company, took a call from a user who was experiencing a problem with a monitor. Following the help desk's standard script, Angel first asked the user's name, telephone number, and office location. Then he asked for information about the user's computer setup and operating system.

The user responded angrily. "Operating system? What difference does it make? Just bring me a new monitor!" Then the user hung up.

Angel waited a few minutes, then called the user. When Angel identified himself, the user snapped, "Where's my new monitor?" Angel explained that the help desk's standard procedure for diagnosing and solving problems required him to ask a few questions before installing a new monitor. He said he needed to know about the operating system because problems that appeared to be signs of hardware malfunction were often the result of software corruption or conflicts.

"Okay, okay, I'm using Windows 2000," the user replied. "Now can I get a new monitor?" Angel asked him to describe the problem with the monitor. "I already told you," the user said. "The screen is blank!" Angel asked if the monitor seemed to be getting power. When the user said it did, Angel asked what the user was doing when the screen went blank. "I wasn't doing anything," the user replied. "I turned on the computer, went to get some coffee while it booted up, and when I came back all I had was a blank blue screen."

Angel then asked him to reboot the computer. As he did so, Angel asked the user if any error messages appeared on the screen. No, the user replied impatiently, the screen was blank, just like before. When Angel asked him to check the monitor's connection to the computer, the user said he had done that before he called the help desk.

Angel decided to connect a new monitor to the user's computer. If it functioned correctly, he would assume that the problem was indeed with the user's monitor and not with the software. If the new monitor did not work either, Angel would transfer the call to a level-two analyst.

As Angel began to disconnect the user's old monitor, he noticed that the connection was loose. He tightened it and rebooted the computer. This time, the monitor showed the operating system's startup screen. Angel had solved the problem without replacing the monitor. However, it had taken him 45 minutes, more than twice as much time as he was supposed to spend on a call.

APPPLYING SKILLS

1. Did Angel follow the correct procedure to solve the user's problem? Outline the procedure he followed, and point out what, if anything, he should have done differently.

2. Do you think Angel handled the user's impatience well? Write a paragraph that states your opinion and your reasons for it.

4.10 Resolving Calls

Call resolution occurs when a solution that is implemented results in the elimination of the problem. Note that the sentence does not say that calls are resolved when symptoms are eliminated. As discussed earlier in this chapter, eliminating a symptom will not prevent the problem from recurring; the root cause must be identified.

A small percentage of calls involve issues that cannot be resolved. There are a number of reasons why problems are not successfully resolved. The user may have discovered a bug in a software program that will not be fixed until the next version of the program is released. Sometimes a workaround is the only option. For example, a user complains of numerous system freezes while running two particular programs at the same time. After troubleshooting the problem and contacting both vendors, the analyst concludes that the two programs are incompatible. The only way the user can avoid the crashes is to run the programs one at a time.

Closing Calls

Once the resolution or outcome has been communicated to the user, the next step is to close the call. Closing refers to the process of explaining why the problem occurred and the steps required to resolve it. It is paramount that the user understands what is going to happen next, whether the help desk will carry out the steps, or if the user must be involved. If the user is to participate in the resolution, it is important to walk the user through the steps required for implementation.

Determining User Satisfaction

Confirming that the user is satisfied with a solution is an essential part of the incident management process. Listen closely to make sure the user is comfortable with the solution. This includes determining whether the user is confident that the solution will resolve the problem, and whether the problem is being eliminated within the user's preferred time frame. Of course it is not always possible to satisfy a user, but showing concern and interest can go a long way toward establishing a positive image of the help desk.

Be sure to thank the person for providing the help desk with the opportunity to be of service, and remind the caller that the help desk is always ready to assist should the current problem recur or another problem arise.

Following-Up

Even though it is referred to as closing a call, the analyst–user interaction does not end with the closing phone call. Within a specified period of time, usually a few days, the analyst follows up with the user to make certain that

everything is working as it should. If the response is positive, thank the user and remind him or her that the help desk is there if future problems develop. If the problem persists, reopen the case and engage additional resources in order to provide a timely solution for the user.

✓ **READING CHECK**

1. **READING REVIEW** When is a call considered resolved?

2. **CRITICAL THINKING** Analyze why it is important for a help desk analyst to follow up after a call is resolved.

Computer Practice 4.7 Close a Service Request

Complete the following exercise using the HelpSTAR software that is on the CD in the back of the book.

1. Start HelpSTAR.

2. Login as John Keyser. To login as John Keyser, click the 'Find User' magnifying glass icon to the right of the 'User Name' field. Locate John Keyser in the list and double-click on his entry. Then enter the password (helpstar) and click the Login button.

3. Click OK to close the 'Tips' window that is displayed.

4. Select *Service Requests > My Workspace > In Service* from the main menu.

5. The 'My Workspace – In Service (I'm the Support Rep) – All' window will be displayed.

6. Click the 'Find' button.

7. Select "Shortcut Not Working" and click the 'Update Service Request' button (🖻).

8. In the 'Forward to:' drop-down box, select 'Close'.

9. Enter the following text in the memo field: ***Network drive not properly mapped in the login script. Updated user's login script, problem resolved.***

10. Click the 'Save' button. The 'Update Request' window will close.

11. Notice that the request is still listed as being 'In Service'.

12. Click the 'Refresh' button (🔄). The request will disappear from the 'In Service' list. The 'No Items Were Found' Message is displayed as there are no longer any items in the list. Click OK.

13. Confirm that the request has been closed.

14. Select *Service Requests > All Requests > Closed* from the main menu.

15. The 'All Closed Requests – All' window will appear. Click the 'Find' button.

16. The 'Date Range' dialog box will be displayed.

17. Accept the default dates or change as necessary. Click the 'OK' button.

18. The list of closed requests will be displayed.

19. Locate the desired request (you may sort the list by clicking on a column heading).

20. Exit HelpSTAR.

4.11 Documenting Calls

Some help desk analysts dislike documenting call resolutions. Once the problem has been solved and the user is up and running, the challenge is over. The documentation process is seen as extraneous paperwork. However, the information obtained as a result of the help desk intervention is not useful to others until it is documented.

Information and Knowledge

Information by itself is not the same as knowledge. Information may or not be useful to another person. If the other person is able to apply the information in a useful manner, the information is then considered **knowledge**. It follows that documenting the cause of a problem and the steps taken to resolve it is an important aspect of the analyst's job. No help desk call is complete until the problem has been appropriately documented. This is especially important when a problem is a new one that has not been reported to the help desk in the past. By recording information about the problem, its cause, and its solution, the information becomes available to other analysts who may be trying to solve similar problems. The key to successful problem documentation on the help desk is recording information in a way that makes it useful to others.

Analysts should always record the following primary information about a help desk incident.

- A description of the problem, including information about the caller, the hardware and software configuration, and the problem itself
- A list of the troubleshooting steps that were taken, including successful and unsuccessful attempts to solve the problem
- The actual problem resolution, including steps taken to fix the problem and follow-up contact with the user

Benefits of Documenting Calls

One of the major benefits of call tracking is the ability to identify trends. For example, management can review the call logs and determine the time of day when the call volume is at its peak; it may be necessary to add additional staff members during that period of time. By studying how often a problem has been reported over a period of time, help desk personnel can determine whether a problem is increasing or decreasing in frequency. If the problem is occurring more often, a team is assigned to determine the reason for the rise in incidents, and a solution can be implemented. If many users are experiencing the same problem, and if that problem is a user error rather than a technological error, there may be a need for user training in that area.

Problem tracking data are also used to create management reports. Help desk reporting is described in detail in Chapter 7. Reports contain information such as the number of times a problem has been reported, the number of support calls from a particular department, and the length of time until a problem was resolved.

Clearly, the information recorded about a call is of great value to the help desk. However, this information is only as good as the data that are recorded by the analyst. If others cannot understand the problem description and the steps taken to fix the problem, they are of little value to the help desk. Solutions that are written poorly may be misunderstood by others and result in incorrect problem diagnoses.

✓ **READING CHECK**

1. READING REVIEW Summarize why it is important for help desk analysts to document the calls they handle.

2. CRITICAL THINKING List the information that a help desk analyst records about each call, and explain why this information is important to document.

›› Summary

The following points were covered in this chapter:

1 The five steps in the problem-solving process are identifying the problem, determining the root cause, generating options, evaluating and prioritizing options, and determining a course of action.

2 It is important to collect appropriate data because identifying the cause of the problem is very difficult if the information collected is not complete and accurate.

3 Techniques that are used to find the root cause of a problem include open-ended and closed-ended questions, replication, and root cause analysis.

4 Creativity plays an important part in problem solving because it can be used to generate solutions to problems that have never occurred before and to problems that for one reason or another cannot be solved using other methods. Brainstorming to produce an uncensored collection of possible solutions is an example of the use of creativity in problem solving.

5 Three techniques used to evaluate and prioritize solutions are module replacement, hypothesis testing, and configuration management.

6 An action plan takes into account issues such as how quickly a solution can be implemented, the availability of resources to implement the plan, the cost of the proposed solution, and the likelihood that the solution will eliminate the problem.

7 Throughout the problem-solving process, a help desk employee must take ownership of the problem, which means seeing it through to its resolution. This includes providing the user with frequent status reports so he or she does not feel ignored.

8 It is important to notify other help desk analysts about problems because they may be working on the same problem, and joint problem solving can be beneficial. If multiple users call in with the same problem at the same time, notification alerts the help desk staff that they are dealing with a more widespread problem than one affecting a single user.

9 Call escalation is when a call is transferred from one analyst to another analyst who can help resolve the problem more quickly. Common reasons problems are escalated are that the problem is not being solved within the preset time frame, the user has not received a response, the problem is serious and time critical, the user holds a high position, and the user is unable to understand the analyst.

10 Three types of difficult users are angry users, abusive users, and talkative users.

11 The three components of problem resolution are closing the call, determining user satisfaction, and following-up on the call.

12 Documenting calls helps other analysts who are dealing with the same problem. It aids help desk management in spotting trends and challenges as they develop. It also provides others on the help desk with valuable information, because most problems reported to help desks have already been dealt with earlier.

Chapter 4 Review

>> Key Terms

The following terms were defined in this chapter:

- **a** action plan
- **b** brainstorming
- **c** call resolution
- **d** closed-ended questions
- **e** decision making
- **f** fishbone diagram
- **g** hypothesis testing
- **h** intermittent problems
- **i** knowledge
- **j** left brain
- **k** module replacement
- **l** notification
- **m** open-ended questions
- **n** problem data
- **o** problem solving
- **p** replication
- **q** right brain
- **r** root cause analysis
- **s** user data

>> Reviewing Key Terms

Write the letter of the key term that matches each definition below:

_____ **1** The process of removing suspected faulty components and replacing them with components that are known to be working.

_____ **2** A process used to arrive at a solution to a situation that is difficult or disruptive.

_____ **3** A list of the steps required to solve the problem as well as a timetable for implementation.

_____ **4** Information about the problem, including the component affected, the symptom, the time the problem first occurred, and a description of the problem.

_____ **5** Questions that can be answered with a simple yes or no.

_____ **6** A process of deliberately taking steps to recreate the problem.

_____ **7** A process used for identifying the underlying factors that are causing a problem.

_____ **8** A graphic representation used to identify all possible causes of a situation that shows the relationships between processes and solutions.

_____ **9** A group technique used to generate as many solutions as possible without judgment.

_____ **10** Questions that require answers with explanations.

_____ **11** A process of evaluating each possible solution through logical testing.

›› **Reviewing Key Terms** (continued)

____ **12** A process of choosing among a number of alternatives.

____ **13** The side of the brain that is the site of rational and analytical thinking.

____ **14** Information about the person who is experiencing the problem, such as name, title, department, and hardware and software configuration.

____ **15** Implementation of a solution that eliminates the problem.

›› **Reviewing Key Facts**

True/False

Identify whether each statement is True (T) of False (F). Rewrite the false statements so that they are true.

____ **1** Help desk analysts may return a computer to a more basic configuration to help determine the cause of a problem.

____ **2** Problems are easier to solve if they can be replicated.

____ **3** A fishbone diagram shows an office layout and is a useful tool for showing the location of the user's computer.

____ **4** The time a problem occurred can provide valuable clues about the cause of a problem.

____ **5** One of the first things an analyst does when approaching a problem is to determine whether information about the problem is stored in a knowledgebase.

____ **6** Information becomes knowledge whenever it is shared with another person.

____ **7** Better customer service would prevent most nontechnical escalations of help desk calls.

____ **8** A help desk analyst need not continue trying to help a caller who has become abusive.

____ **9** Call resolution occurs when the symptoms of the user's problem have been eliminated.

____ **10** Closing a call is the process of explaining to the user why the problem occurred and the steps required to resolve it.

Completion

Write the answer that best completes the following statements:

1 Creativity is a function of the _____ side of the brain.

2 _____ is a technique that tries to find the cause of a problem by intentionally recreating the problem.

3 Altering a user's hardware or software to return it to a more basic state is known as _____.

4 A help desk analyst can ask _____ questions to keep a talkative user focused on the problem.

5 The primary information the help desk should record about each call includes description of the problem, a list of the _____ that were taken, and the ultimate resolution of the problem.

Chapter (4) Review

›› Understanding Key Concepts

Provide brief answers to the following questions:

1 What are the benefits of asking closed-ended and open-ended questions, respectively? In root cause analysis, what are the three steps of information processing, in order?

2 What can a help desk analyst do to ensure that a user is satisfied with the resolution of a problem, and why is it important to do it?

›› Critical Thinking

As directed by your instructor, write a brief essay or discuss the following issues in groups.

1 Why are some problems harder to solve than others?

2 Which step of the problem-solving process do you think is most important? Why?

3 The problem is that a CD player located in the trunk of a car will not play. How would you test each of the following hypotheses about this problem?

- The car's battery is dead.
- A fuse is blown.
- The CD player has become unplugged from the wiring harness.

›› Help Desk Projects

Complete the projects listed below:

1 **Ask a classmate, friend, or family member to describe a recent problem with a computer.** (Make sure you tell them not to tell you the resolution of the problem.) Using the problem-solving tools and techniques described in this chapter, identify the root cause of the problem.

2 **If your school has a help desk, see if you can obtain permission to observe an analyst who is taking calls from users.** Listen closely, and identify the problem-solving techniques used by the analyst. List the actions that were performed during each stage of the problem-solving process.

3 **A user reports that when she sends a report to the printer, the pages are blank.** Create a fishbone diagram to identify all possible causes of the problem.

4 **As an exercise in using the right side of your brain,** develop a 10-minute explanation of how a computer works that would be clear to someone who has never used a computer.

›› Help Desk Projects *(continued)*

5 **Imagine that a user is trying to access a Web site and gets the message "The page cannot be displayed."** Form a brainstorming team to develop all possible reasons for the failure. Appoint one person to write down all suggestions on a flipchart as quickly as possible. Once there are no more suggestions, decide as a group which two reasons are the most likely cause of the problem.

6 **Team up with a classmate, and take turns playing the roles of an angry user and a help desk analyst who takes the user's call.** Each call should take no more than five minutes. Afterward, discuss whether the responses of the person in the help desk analyst role were likely to make the user more angry or less angry and what responses, if any, might have been more productive.

7 **A user calls to report that his laptop computer will not work on battery power.** Make a list of the questions you would ask him. Note whether each question is open-ended or closed-ended.

8 **Compose a brief paragraph noting the information that you would record about the following situation.** A user calls the help desk because her laptop computer will not run on battery power. You ask her to check its power-use settings and tell you what they are, and they turn out to be correct. Next, you ask her to leave the computer's power cord plugged in for an hour to charge the battery and to call you back before she tries to use the battery again. When she calls back, you ask her to detach the power cord from the computer and tell you what happens. She says the computer shuts down. You then ask her to try restarting the computer without plugging it in, and she tells you that it does not start up. You replace the battery, and that solves the problem.

9 **Write a description of your own personality and temperament in terms of your aptitude for a help desk career.** For example, would you describe yourself as a methodical or as a creative person? Would you rather work alone or as part of a team? How do you generally deal with difficult people and tense situations? Do you think clearly under pressure? Use examples to support what you say about yourself.

›› Help Desk Strategies

Review the following case studies and respond to the questions:

1 A help desk analyst takes a call from a frantic user who is afraid she has lost all the data on her hard disk. She reports that her computer is on but that she sees nothing on the screen. She seems to be in a panic and not thinking clearly, because she has made several contradictory statements.

- What could the analyst do to calm the user?

›› Help Desk Strategies *(continued)*

- What closed-ended questions could the analyst ask to rule out an obvious cause of the problem?
- If closed-ended questions did not provide enough information to solve the problem, what are some open-ended questions the analyst might ask?

2 An hour after the office opens, a user calls the help desk to report that he has been unable to log in to the network since he arrived at work. When he enters his ID and password, he gets an error message telling him that either the ID or password is invalid. He has tried this several times, always with the same result. On the previous day, he was able to log in with no problem. The analyst can see from her own computer that the network is operating normally, and no other users have called the help desk to report problems logging in today.

- What are some possible causes of the user's problem?
- How could the analyst determine which of the possibilities is the most likely cause?

3 An analyst takes a call from a user who cannot upload photographs from his digital camera to his PC, as he has done in the past. The call is directed to a first-level analyst, which is company policy for an initial call about any problem. The first-level analyst has no experience with digital camera connections, but the help desk has a senior analyst who specializes in problems with peripheral devices, including cameras. The first-level analyst collects information about the user's hardware, operating system, and the application he uses to upload photographs. The analyst also obtains a description of what happened when the user tried to upload the photographs, but the description does not provide the analyst with any ideas about how to solve the problem. The analyst has not yet reached his time limit for solving the problem, but he is not confident that he can find the solution.

- What other steps might the analyst take to find a solution?
- What tools might the analyst use?
- What can the help desk do for the user if the analyst cannot solve the problem in a short time?