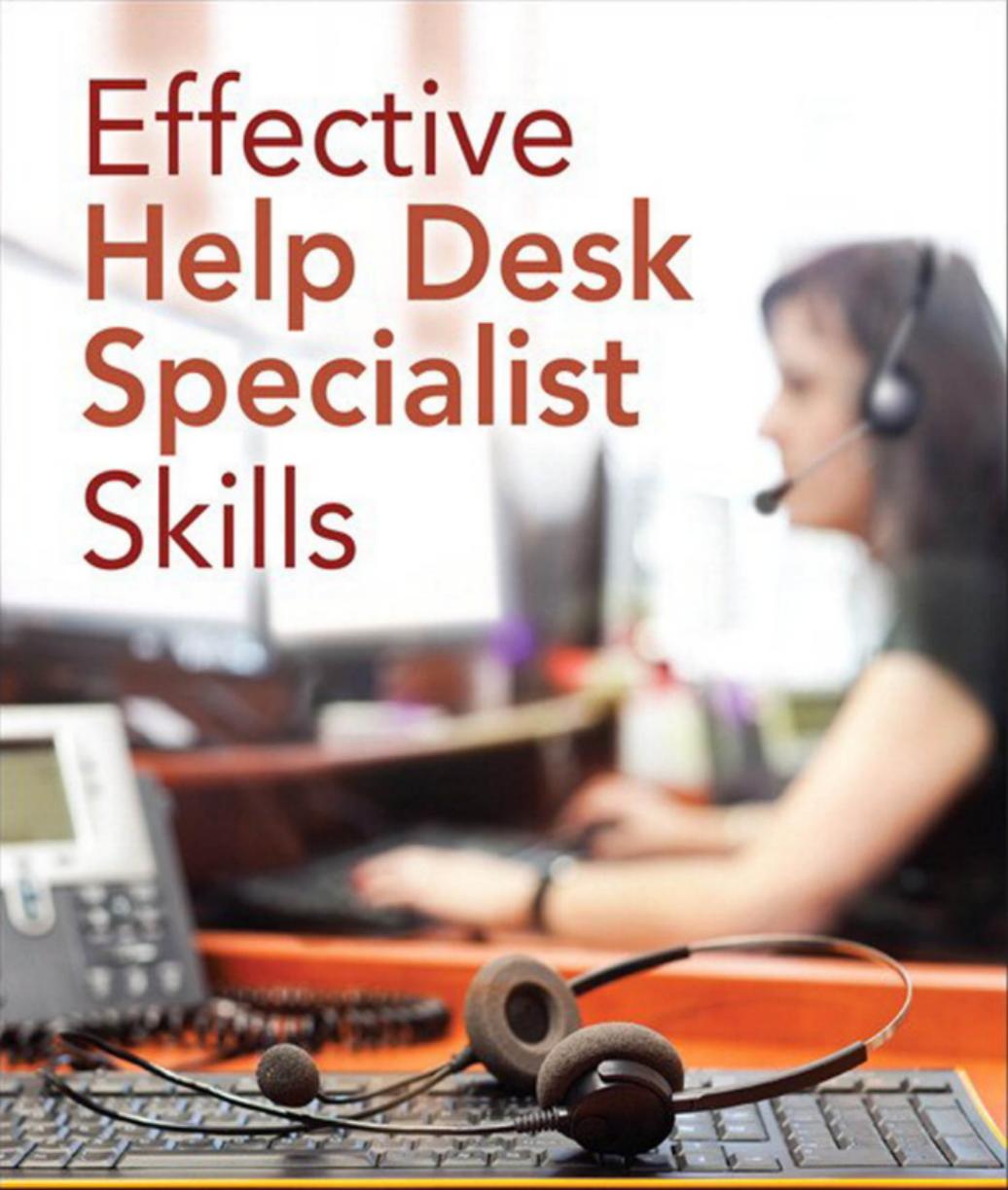


# Effective Help Desk Specialist Skills



Darril Gibson

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# Effective Help Desk Specialist Skills

Darril R. Gibson

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800 East 96th Street

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# Effective Help Desk Specialist Skills

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## **Dedication**

*To my wife, Nimfa, who has enriched my life in so many ways over the past 22 years.*

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His major contribution to the teaching profession is his dedication to the students, and his desire to produce graduates with adequate skills to succeed in their chosen profession.

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# Introduction

The term “help desk” means different things depending on the context. At the core, help desk professionals provide services to customers. These customers might be internal employees or external customers of products or services, but they are all customers. In a small organization, the help desk might be a single person doing everything. In an organization with a large IT department, the help desk might be a large division of personnel dedicated to helping personnel within the organization. Some organizations, such as Internet service providers (ISPs), provide services to their customers via a help desk.

However, in any of these situations, help desk professionals require a core set of skills to succeed. Many people think that technical and troubleshooting skills are enough, but they aren't. Instead, help desk professionals require a broad set of both hard and soft skills:

- Hard skills are specific, measurable skills such as configuring and troubleshooting systems. Some specific hard skills help desk professionals need are technical skills related to the systems they support, troubleshooting skills to correct problems, security skills to recognize and correct security issues, and business skills to use the tools within the business.
- Soft skills refer to the ability to communicate effectively with others. Communication skills are of primary importance, especially when communicating with customers and personnel within an organization, but additional soft skills are also required. Personal skills help individuals manage their time, stress, and career. Writing and training skills help individuals pass their knowledge onto others.

While this knowledge is important for anyone pursuing a career in an IT help desk position, it is also important for anyone pursuing a career that will oversee help desk professionals. This includes IT managers and C-level executives such as chief executive officers (CEOs) and chief technology officers (CTOs). Many times, help desk professionals provide the first impression of an organization. If they are technical people without any personal skills, it can negatively affect the organization's success and bottom line.

## Organization of the Text

The book begins with the assumption that students are not familiar with the help desk role and how it operates in many organizations. It covers a combination of both hard skills and soft skills that help desk personnel need to succeed:

- Chapter 1 provides an overview of the help desk support role, required skill-sets, user categories and characteristics, and the flow of a typical incident.

- Chapters 2, 3, 7, and 8 provide information on soft skills. These topics include communication skills, personal skills, writing skills, and training skills.
- Chapters 4, 5, 6, and 9 provide information on hard skills. These topics include technical skills, security skills, troubleshooting skills, and business skills.
- Chapter 10 provides information on how to calculate the value of the help desk using metrics, and on comparing costs in a cost benefit analysis.

Each chapter has the same organization, starting with an introduction, a list of learning objectives, and a list of key terms that are important within the chapter. Chapter review activities are included at the end of the chapter. These include questions, a list of key terms and acronyms, and exercises such as mind map suggestions or case studies. Your instructor might want you to read all the sections of a chapter and use all of the review tools. It's also possible your instructor only wants you to read specific sections and use specific review tools. It's best to check the syllabus to identify which parts of the book to use.

## Key Pedagogical Features

### To begin the chapter:

Each chapter begins with a few features that help direct you as to what the chapter discusses, before getting into the core topics of the chapter:

- Chapter Introduction describes the big ideas in the chapter, with perspective on how it fits with the other chapters.
- Chapter Outline lists the titles of the (usually three or four) major sections in each chapter, with a short description.
- Chapter Objectives list the most important student results from using this chapter as part of a course.
- Key Terms list the terms for the most important concepts in the chapter. These terms and their related concepts should be the reader's top priority for what to understand and recall from this chapter. As a suggestion, while reading the chapter, make notes about each of these terms.

### In the core of the chapter:

The majority of each chapter, following the chapter introduction, uses text, tables, lists, and figures to explain various topics. Along with those descriptions, the core topics also use the following features:

- **Key Terms:** Inside the chapter, the key terms are noted in a large, bold font so that they can be easily found.
- **Author's Note:** These notes list topics that the author wants to draw particular attention to, but which you can skip when reading if you want to maintain the flow. Author notes typically list some deeper fact about the current topic or some fact that may be a little off-topic. Read these notes either during your first read of the chapter or when reviewing and studying.

- **On the Side:** These notes list topics that add interest to the topic, but which your instructor probably will not require you to know for tests. (Check with your instructor.)

### **In the chapter-ending Chapter Review section:**

The end of each chapter closes with a Chapter Review section, which has tools and activities that you can use to review the reading from inside the chapter:

- **Answer These Questions:** These multiple-choice questions help you review topics in the chapter.
- **Define the Key Terms:** This heading lists the same key terms listed in the beginning of the chapter. The section reminds you of the terms and suggests an activity where you write the definition for these terms in your own words. You can then compare your definition with the definitions in the glossary.
- **List the Words Inside Acronyms:** As a simple review, take this list of acronyms from the chapter and write out the words represented by the acronym. Then, check the acronyms in the glossary.
- **Create Mind Maps:** This heading suggests a few mind-mapping activities to help you mentally review the chapter.
- **Define Other Terms:** As a simple review, take this list of other terms from the chapter, beyond the list of key terms, and write out a definition for each. You can then compare your definition with the definitions in the glossary.

### **Other features outside each chapter:**

Beyond the features in each chapter, this book comes with other helpful features as well:

- **Glossary and Index:** The glossary lists the various terms used in the book, with definitions, while the index lists page references for the most common of those terms.

## **A Brief Word on Mind Mapping**

Mind maps are a type of graphic organizing tool that give learners a visual way to learn, take notes, organize thoughts, and think. Each chapter includes some suggested mind-mapping exercises as a way to help you think about the topics in that chapter.

With the mind-mapping exercises in these chapters, the goal is not for you to create the exact same mind map that the author had in mind when creating the activity. Instead, the point of the activity is what happens to your own mind and memory by simply doing the activity. These activities help you to:

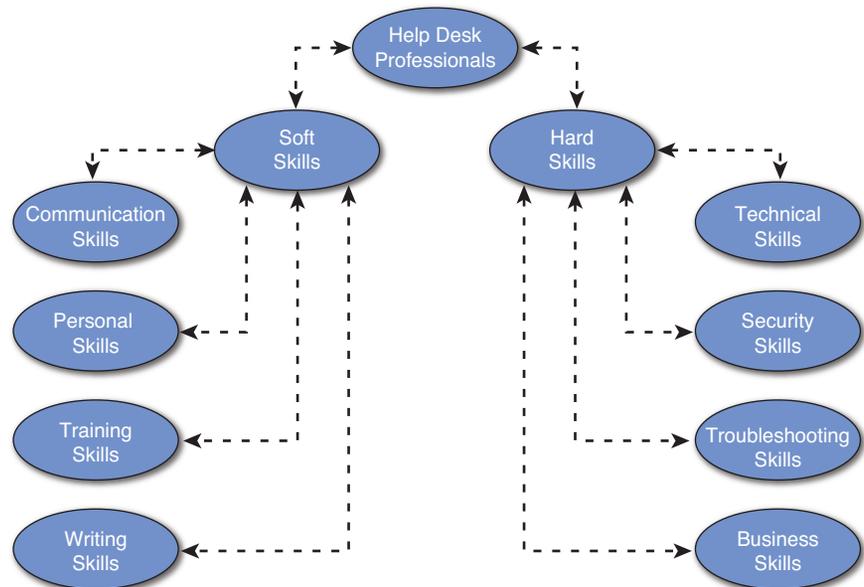
- Organize the topics in your own mind and your own words.
- Improve your memory of the concepts and terms.
- Build a stronger understanding of how the ideas relate to each other.
- Build a stronger understanding of what topics go together, and which topics differ.

You can create mind maps with software, or just with pencil and paper. When using pencil and paper, start by creating a circle or box and write the main topic within it. Next, think of a related topic, create another circle, and write this topic within it. Then, connect the topics with a line. Continue the process until you've exhausted your knowledge.

The main point is that you list the topics and show their relationships with connecting lines. As an example, imagine you're asked to list the skills required of support personnel, and organize these skills into two categories. Figure I-1 shows one possible result.

FIGURE I-1

Sample mind map.



If you just glance at the figure, and see the somewhat basic ideas and terms and stop there, you miss the whole point of the mind-map exercise. First, think about the core idea, listed in the center as “Help Desk Professionals.” Would you use this term for support personnel or some other term? The mind map starts with a blank sheet of paper, so you have to choose. What other categories might you use instead of “Soft Skills” and “Hard Skills?” If you thought of several, you could add a list of synonyms or alternatives to the mind map, but it gives you the chance to think about what terms to use.

Think about the next level of organization, listing individual soft skills and individual hard skills. Can you think of others to add to the list? Also, you might consider some skills to be in both categories. For example, you might think of some individual business skills that are hard skills while others are soft skills. You could add an extra line from “Business Skills” to the “Soft Skills” heading. However, making the decision to add the extra line requires you to think about how a business skill could be a soft skill in addition to a hard skill.

Finally, consider the core topic of “Help Desk Professionals.” You could include subcategories, depending on how they communicate to customers such as in-person, over the phone, via email, or online instant messaging chat windows. For some of these, you might consider some skills to be more important than others and put them in a different order.

The point of these exercises for this book is not the finished mind map as much as the process. While creating the mind map, you might add or change items, move items, or add and erase lines. (Using a pencil rather than a pen, or software, really is preferred so that you can make changes.) Each time you write something and see the correct relationship, it reinforces your memory. Each time you write something and start to question it, it helps you uncover where you have questions. As you pursue answers, your level of knowledge will become much deeper.

## **Conclusion**

Help desk support is an important element of any organization. Organizations historically filled this role with technical personnel that knew a little about computers. However, organizations now look for personnel with a broad set of skills including both hard skills and soft skills. I hope you enjoy learning about core skills sets required by help desk professionals (and many other IT professionals) as you work through this text.

# Chapter 1

## Introduction to Help Desk Support Roles

Help desk specialists require a wide range of skills to be successful. Their primary job is to help users, and the obvious skills they need are technical so that they can troubleshoot and resolve problems. However, they also need to have other skills and knowledge to be effective on the job.

This chapter introduces the support center, help desk professionals, users, and incidents (or problems) in four major sections:

- The first section, “Understanding the Support Center,” provides some history related to computers and information technology (IT) and how the support center has evolved over the years. It also identifies services provided to the users.
- Next, “The Role of the Help Desk Professional” section identifies the role of IT workers working as help desk professionals. These professionals are the first line of support for users, and they routinely assess problems and identify solutions. While the job is technical in nature, technicians on the help desk also require skills beyond technical and troubleshooting skills. This section introduces many of the skillsets needed by the help desk professional.
- The “Understanding Users” section describes many common user categories and some of their common characteristics. By understanding the user, help desk professionals are better able to recognize their needs.
- Last, the “Typical Incident Process” section lists the steps for a typical incident. It also explains the importance of tracking incidents and some of the metrics that can be used to determine the effectiveness of a help desk center.

This chapter lays the foundation for the rest of this book by introducing many of the core skills and common tasks of help desk specialists. Other chapters in the book delve into many of these topics at a deeper level.

## Chapter Outline

Understanding the Support Center  
The Role of the Help Desk Professional  
Understanding Users

Typical Incident Process  
Chapter Review Activities

## Objectives

- Define the key terms related to help desk support roles
- Describe the primary role of the support center
- Summarize the services provided to users
- List and compare the different tiers of support
- Describe the skillsets required of successful help desk professionals
- Compare different user categories
- List and describe the steps in a typical incident process
- Explain the benefits of tracking incidents

## Key Terms

business skills

cost center

escalate

help desk

incident

incident management

Internet service provider (ISP)

malware

metric

profit center

security skills

service level agreement (SLA)

technical skills

technical support

ticket

troubleshooting skills

## Understanding the Support Center

### AUTHOR'S NOTE:

The primary purpose of the help desk is to assist users, and in this context, the users are customers. This is obvious when users are purchasing a product or service from the organization, and aren't employed by the organization. However, users within an organization are also customers. The help desk is providing a service to these users and needs to ensure they are satisfied just as if they were paying customers.

The purpose of an IT support center is to provide **technical support** to users. This includes starting (or booting) a computer, logging on, configuring a computer, configuring and running applications, and accessing network resources. The support center might support users within the same organization or, in other cases, the support center might support external customers of the organization.

For example, large organizations have in-house IT departments to assist users within the organization. Help desk employees working in a support center division of the IT department assist other employees in the same organization. In contrast, **Internet service providers (ISPs)** provide Internet access to their subscribers and employ help desk personnel to assist ISP subscribers. Customers that are having problems accessing the Internet or using any of the ISP services contact the support center for assistance.

### A Little History

Prior to the 1970s, computers used within an organization were restricted to mainframes that typically took up a full room. Many were the size of a large refrigerator and had only a fraction of the computing ability of today's computers. Organizations lucky enough to have these computers employed a few highly qualified personnel to maintain and operate them.

In 1976, Steve Jobs and Steve Wozniak started Apple and began selling the first computer for home use, the Apple I. In 1981, IBM created the IBM Personal Computer (or IBM PC), which became a standard used in many organizations by regular employees. IBM contracted with a small start-up company called Microsoft, founded by Bill Gates and Paul Allen, to provide the disk operating system (DOS) for the IBM PC. Back then, Bill Gates had a vision of "a computer on every desk and in every home" and used this DOS as a starting point.

The DOS used on IBM PCs included a disk operating system called PC-DOS. However, Microsoft retained the rights to the software and began selling it as MS-DOS (Microsoft Disk Operating System). Several other manufacturers began creating their own PCs running MS-DOS, and these PCs provided much of the same functionality as IBM PCs. These IBM PC-compatible computers came to be known as clones, and in time, the clones overtook IBM's market share. IBM no longer manufactures PCs, but the combination of these events helped the PC market expand exponentially.

Today's world is much closer to Bill Gates's vision of a computer on every desk and in every home. Moreover, it is very common for almost every employee within many organizations to have a PC. Over time, Microsoft developed increasingly more sophisticated Windows operating systems and applications. Additionally, many other companies developed highly useful applications that streamlined work processes, steadily increasing overall employee productivity.

In 1969, the Advanced Research Projects Agency Network (ARPANET) started developing a network used by universities and research laboratories in the United States to share information between each other over long distances. This morphed into the Internet in the 1980s, and eventually became a network accessible by users around the world. Currently, it's estimated that more than 2 billion users have access to the Internet.

Along with the explosion of the Internet, organizations began connecting computers and other resources together in local area networks (LANs). Large organizations with multiple buildings spread across a campus connected the building LANs together in metropolitan area networks (MANs). Organizations with buildings or campuses in multiple locations connected their LANs together in wide area networks (WANs).

Note that in the span of just a couple of decades (from the '70s to the '90s), computer usage within organizations sharply increased. Previously, organizations used very few computers and needed very few IT support personnel. However, as the IT usage grew, there became an obvious need for more IT support personnel.

## The Evolution of the Support Center

While the growth of computer use, networks, and the Internet has provided significant benefits for organizations, these computers, applications, and networks have become increasingly complex. Ideally, they work as expected all the time. In reality, computers and networks display a wide range of problems from minor operability problems to complete failure. Users cannot be expected to know all the technical details required to maintain and troubleshoot computers and networks any more than they can be expected to know everything about phones and all the details about the plain old telephone system (POTS) or the more sophisticated Integrated Services Digital Network (ISDN). Instead, organizations realized that they needed specialists within an IT support center to maintain the computers and networks, and help the users when necessary.

The support center role has evolved over time. When an organization had only a few desktop computers, the support center was typically one or two computer experts. These experts did everything related to the computers. As computer use grew, it was apparent this model was no longer effective. Instead, organizations began to separate the roles of the IT personnel based on different needs.

It's important to understand that the help desk is a cost center instead of a profit center. A **profit center** generates revenue for a company and includes departments such as sales and marketing. These departments generate sales and help earn profits for the company. A **cost center** generates additional costs for a company without bringing in any direct revenue. For example, the IT department does not generate any sales, so it does not bring in any additional revenue. Instead, it only generates costs for IT hardware, software, and services.

### ON THE SIDE:

Understanding the difference between profit centers and cost centers is important for IT professionals if they want to speak the language of senior management. Senior management will often respond to saving funds by investing in IT support. In contrast, IT personnel that simply ask for more money without showing the benefits to the organization often walk away empty-handed.

Companies that care about the bottom line focus on increasing revenue and decreasing costs, so the idea of creating or expanding a help desk isn't always embraced. However, over time, many organizations realize that providing IT support to users significantly improves their overall productivity—but the value of the help desk still needs to be justified. One way costs are justified is through metrics discussed in the Typical Incident Process section later in this chapter.

## Understanding an Incident and Incident Management

When talking about a help desk and its functions, it's important to understand two key terms: **incident** and **incident management**. In simple terms, you can think of an incident as a problem. Customers typically report the problem to the help desk and the help desk technicians take steps to resolve it. An organization implements incident management processes to ensure that all incidents are resolved to the best ability of the organization.

However, there are definitions that are more specific. Chapter 9, “Business Skills,” includes information on the Information Technology Infrastructure Library (ITIL). ITIL is a group of books written and published by the United Kingdom's Office of Government and Commerce (OGC). It has been around since the 1980s and has improved and matured since then. ITIL provides organizations with a collection of good practice concepts that can improve IT processes within any IT organization. Its goal is to help organizations identify functions, roles, and processes that can benefit from these concepts to ensure IT services remain available on a consistent basis.

ITIL provides the following paraphrased definitions for an incident and incident management:

- **Incident.** An incident is an unplanned interruption or a reduction in the quality of an IT service. It can also be the failure of a fault tolerant or redundant solution designed to increase the availability of a service. For example, the failure of one disk in a mirror set is an incident.
- **Incident Management.** This includes all processes and procedures used to deal with incidents. Incidents might be reported by users, by technical staff, or from automated tools that perform event monitoring and reporting.

### ON THE SIDE:

A mirror set is also known as a Redundant Array of Independent Disks -1 (RAID-1) and it provides fault tolerance. Fault tolerance indicates a system can suffer a fault but tolerate it and continue to operate. In other words, one drive can fail but the mirror set can tolerate the failure and continue to operate. Users will still be able to access the data from the RAID-1, but it no longer has fault tolerance after one drive fails.

## The Role of the Support Center

Organizations often divide an IT department into several different divisions. Personnel working within these divisions are able to focus on specific IT requirements and become experts within that area. While the following list is not inclusive, it does identify many of the common divisions:

- Help Desk
- Infrastructure

- Servers
- Security
- Software

## Help Desk

The **help desk** provides direct support to the end users. Support provided by the help desk varies between organizations; later in this chapter, the section “Services Provided to Users” explains many of the common services organizations choose to provide. Overall, this book focuses on the help desk division, or the help desk function, within an IT department.

## Infrastructure

Large networks have dedicated technicians and administrators to maintain the network infrastructure. This includes network connections and hardware such as routers and switches, and access to other networks such as the Internet. If an organization doesn't have a dedicated security team, technicians maintaining the network would also maintain firewalls and proxy servers that are connected to the Internet. In some smaller organizations, infrastructure technicians are part of another division, such as the servers division.

## Servers

Organizations typically have one or more servers that require some advanced knowledge to configure and maintain. Some examples are file servers where users store and access files, mail servers used for email, and web servers used to host web sites. Administrators that maintain these servers might also work on the network infrastructure.

## Security

Security has become increasingly important to organizations due to the frequency of attacks and the high level of threats. Criminals often attack networks trying to steal data such as customer information or company secrets. In other cases, criminals launch sophisticated denial of service (DoS) attacks with the goal of taking down a server, network, or any type of service provided by the company.

Malicious software (**malware**) includes viruses, worms, Trojans, logic bombs, and more. Antivirus software helps protect against malware but it is only useful when all appropriate systems have antivirus software installed, and it is kept up-to-date. Years ago, organizations depended on employees to maintain and update antivirus software, but this rarely worked. Today, security experts deploy, update, and maintain this software remotely.

Network security experts maintain firewalls and Internet-facing servers to provide a level of protection for the internal network. In many cases, these network security experts also manage the antivirus software for the company. Proactive organizations task these security experts with performing vulnerability assessments and risk analysis. Even if an organization doesn't have a dedicated team of security professionals, technicians in other areas of the company will still be responsible for maintaining IT security.

## Software

Some organizations develop their own software. They have dedicated programmers to create, maintain, and troubleshoot these applications. Programmers rarely work on regular servers or the network infrastructure, though they might be responsible for the configuration and maintenance of web servers and database servers.

An effective IT department has a team mentality and recognizes the need for the different divisions to work together. Even though the separate divisions have different responsibilities, they frequently interact with other.

## IT Tiers within an Organization

Organizations typically organize support to their customers in separate levels, or tiers. Most organizations that use tiers have three internal tiers, and some identify a fourth external tier. Technicians at lower-level tiers try to resolve the problem to the best of their ability. If they are unable to resolve the problem, they **escalate** the problem. In other words, they pass the problem on to a technician at a higher tier to resolve the problem.

Support personnel at each tier might work on the same **incident** or trouble call. For example, when the customer makes initial contact with a tier 1 technician, this technician logs it as an incident and begins working on it. If the tier 1 technician cannot resolve the incident, this technician escalates the incident to a higher tier. As the incident escalates through the tiers, technicians at each level review past activity and log their actions. This ensures that all technicians are able to see the full scope of the problem and the previous actions taken to resolve it.

Figure 1-1 shows an overview of the tiers, and the following bullets describe them in more depth.

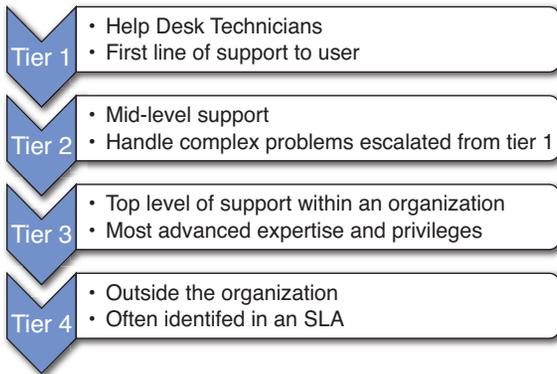


FIGURE 1-1

Four tiers of support within an organization.

- **Tier 1.** Help desk personnel are tier 1 and provide basic support to users. Technicians have basic skills, knowledge, and privileges to resolve simple and common problems.
- **Tier 2.** Technicians with a higher level of knowledge, experience, and permissions work at tier 2 and can assist tier 1 technicians resolve more complex problems. These technicians often have experience at the tier 1 level, or at least have experience providing direct assistance to users. In most cases, these technicians have dedicated jobs in other areas of the IT department, such as maintaining servers or the network infrastructure.
- **Tier 3.** The highest tier in most organizations is tier 3. Administrators and technicians at this tier troubleshoot and resolve the most difficult or complex problems. Just as tier 2 technicians have other job responsibilities, tier 3 technicians also have other responsibilities. For example, they might be working on IT projects related to expanding IT services or migrating older systems and data to newer systems.
- **Tier 4.** Many organizations have **service level agreements (SLAs)** with outside organizations. An SLA stipulates the performance expectations and identifies support services provided by the vendor. When certain problems appear, they contact the outside entity to resolve them. For example, an organization could have an SLA with Microsoft and work with Microsoft personnel to resolve problems related to Microsoft operating systems and software. Similarly, they might have an SLA with Dell to replace failed hardware.

**ON THE SIDE:** Not all service level agreements are external to an organization. For example, two departments or subsidiaries of the same organization can use a memorandum of understanding (MOU) or memorandum of agreement (MOA) as an agreement to provide a certain level of service. One entity provides assurances to the other entity that they will meet performance expectations. The major difference is that an SLA typically includes monetary penalties if the vendor does not meet the performance expectations. In contrast, an MOU or MOA does not include penalties but instead indicates that each party will employ their best efforts to uphold the agreement.

While tier 1 technicians will try to handle most problems without escalating them, there are situations when they quickly escalate an incident. For example, if technicians realize that the same incident is affecting multiple users, they will escalate the incident to a higher tier. Many times, help desk supervisors make the call to escalate an incident and then communicate updates to help desk personnel to ensure they don't work on an escalated problem.

## **The Role of the Help Desk Professional**

Customers and users depend on the IT staff to keep systems available and operational. In this context, the IT staff includes all of the personnel that work directly with users and customers, and all of the personnel that are working behind the scenes to keep the servers and network infrastructure operational. This requires a significant amount of technical expertise by the technical staff combined with a dedication to the job. The help desk professional is often the “face” of the IT staff that customers see and, right or wrong, customers often make judgments about the entire organization based on their interactions with a help desk professional.

With this in mind, it's important for help desk professionals to understand their role within the organization and especially their role to customers. In addition to having a strong set of technical skills, help desk technicians also need to have a strong set of soft skills.

## **First Line of Support for Users**

While most organizations have several tiers or levels of support personnel, the help desk is the first line of support for users. When users experience a problem, they contact the help desk first for assistance. Ideally, the help desk can resolve the problem and the customer will be satisfied. Even if help desk personnel cannot fully resolve the problem, they need to provide assistance in such a way that leaves the customer with a favorable impression of the organization. In order to do so, help desk personnel need to have strong communication skills and understand the organization's goals related to customer service.

## **Assessing Problems and Identifying Solutions**

The primary reason customers contact the help desk is because they have problems they want to resolve. Help desk specialists focus on assessing problems and identifying solutions during the majority of their workdays. This indicates that their primary skills are technical, but this isn't always the case.

Certainly, help desk personnel need to have technical knowledge and the ability to troubleshoot problems. However, assessing problems and identifying solutions for help desk customers goes well beyond the technical skills. For example, they also need to communicate effectively with the customer to understand the problem and communicate the solution. Also, some people are energized by problems and the

challenge to solve them. In addition to helping the customer, they really enjoy the satisfaction of identifying solutions and solving problems. In contrast, some people are troubled by problems and view them as obstacles and irritations. Their goal is often to just get rid of the problem as soon as possible rather than ensuring the problem is resolved.

## Recognizing Required Skillsets

Many people think that help desk technicians only need the technical skills required to solve problems. However, successful help desk technicians require a wide range of skillsets. These skillsets are often categorized as hard skills and soft skills.

**Hard skills** are specific, measurable skills such as configuring and troubleshooting systems. **Soft skills** refer to the ability to communicate effectively with others. In short, hard skills can often get you an interview while soft skills can get you the job. After landing any technical job, a good mix of both hard and soft skills help individuals move up into higher-level positions. In contrast, a lack of a mix of skills in both skillsets either prevents people from getting jobs or keeps them stuck in the same position much longer than personnel with a good mix of hard and soft skills.

**ON THE SIDE:** Hiring managers often talk about the lack of qualified candidates to perform jobs, but they aren't always talking about hard skills qualifications. For example, a survey in 2013 by the Society for Human Resource Management indicated, "Nearly one-half (49%) believe 2013 college graduates are lacking the knowledge/basic skill of writing in English." Hiring managers viewed these candidates as unqualified due to their lack of soft skills. You can access the survey here: <http://www.shrm.org/Research/SurveyFindings/Articles/Pages/Hiring2013CollegeGraduates.aspx>.

### Hard Skills

Hard skills are specific abilities that can be taught and measured. For example, someone might take a class to learn about security topics and then pass the CompTIA Security+ exam, earning the CompTIA Security+ certification. The certification indicates that the individual has specific competencies related to IT security. Some of the common hard skills needed by help desk technicians are technical skills, security skills, troubleshooting skills, and business skills (later chapters will discuss these topics more in-depth).

- **Technical skills** refer to the technician's ability to configure, maintain, and troubleshoot IT systems. These skills vary between organizations and even between specific jobs within an organization. For example, a help desk technician working at tier 1 needs to have in-depth knowledge about the systems and products that end users operate. This knowledge ensures these technicians can help the end users. A tier 2 technician needs to have in-depth knowledge about much more, such as the network infrastructure and servers operating within the organization. (See Chapter 4, "Technical Skills.")

- **Security skills** have become more and more important in recent years. Attackers and criminals are constantly waging attacks on individuals and organizations of all sizes. For example, malware is a common threat and technicians need to be able to recognize malware symptoms and resolve them. Employees that understand the relationship between vulnerabilities, threats, and risks are much more likely to recognize attacks when they occur. Additionally, these employees are much more likely to understand and readily comply with an organizations security policies. (See Chapter 5, “Security Skills.”)
- **Troubleshooting skills** refer to the ability of a technician to identify and resolve a problem. The highest tier in most organizations is tier 3 and administrators and technicians at this level troubleshoot and resolve the most complex problems. However, tier 1 technicians should be able to perform some basic troubleshooting steps to narrow the problem. (See Chapter 6, “Troubleshooting Skills.”)
- **Business skills** refer to the technician’s understanding of the organization’s vision, mission, and values, in addition to the ability to use tools available within the organization. Successful technicians understand the elements of a business and their role within the business. Businesses often deploy tools such as help desk applications, and technicians need to be able to use them. For example, technicians should be able to enter all appropriate information into a help desk application and use it to search for previously known problems so that they can quickly resolve some problems for users. (See Chapter 9, “Business Skills.”)

## Soft Skills

Soft skills are much more subjective than hard skills. They are typically associated with personal attributes and indicate how successfully individuals are able to work with other people in teams and how effectively they are able to interact with users. Each soft skill will be discussed in more depth in later chapters.

- **Communication skills.** Effective communication is extremely important in IT support job roles. Technicians need to be able to question the user to get adequate information on a problem without taking on a tone of interrogation. Two important communication skills are using open-ended questions and active listening. (See Chapter 2, “Communication Skills.”)
- **Personal skills.** Personal skills refer to someone’s ability to manage different situations and manage themselves. A core personal skill is attitude, which includes maintaining a positive attitude in general and evoking an attitude of service toward the customer. Other elements of personal skills include the ability to manage personal time, stress, and an individual’s career. (See Chapter 3, “Personal Skills.”)
- **Writing skills.** Superior written communication is one of the most important soft skills for help desk technicians, especially in organizations that use a searchable knowledge base. Technicians and administrators use these systems to search for common problems and how to resolve them. In order for this database to be useful, support technicians must document their actions after they resolve a problem, and so strong writing skills are important. (See Chapter 7, “Writing Skills.”)

- **Training skills.** In many cases, technicians provide training to users so that the users can resolve problems on their own the next time they occur. This can be informal one-on-one training or in some cases formal classroom training. When an organization deploys new operating systems or applications, they often provide formal classroom training to the users before the deployment. The goal is to help the users understand the product and reduce the load on the help desk after the deployment. Senior technicians are also expected to provide training to newer technicians. (See Chapter 8, “Training Skills.”)

**AUTHOR’S NOTE:** I sometimes hear from readers complaining that they can’t get a job or aren’t getting any callbacks for interviews and imploring me to help. To me, the reason is obvious—a lack of adequate soft skills. As an example, here is a snippet of a recent email I received from someone named “Bob” (not his real name).

*“The subject of my email is that I need help, the help I need from you is job. I know you know and have made a lot of contact over the years through out your career and it looked like these days you have to know somebody to be able to get a job.”*

I never met Bob, but I would guess that a lack of communication and writing skills is preventing him from getting interviews and job offers. I tried to explain this in my response but never heard from him again. Maybe he understood and chose to improve his soft skills. He also could have decided to ignore my advice and might still be trying to break into the IT field.

## Critical Thinking

Critical thinking is another soft skill that makes a world of difference in job performance. Unlike the other hard and soft skills mentioned in this chapter, it is not covered in a specific chapter within this book, so it is expanded here. Critical thinking includes the following activities:

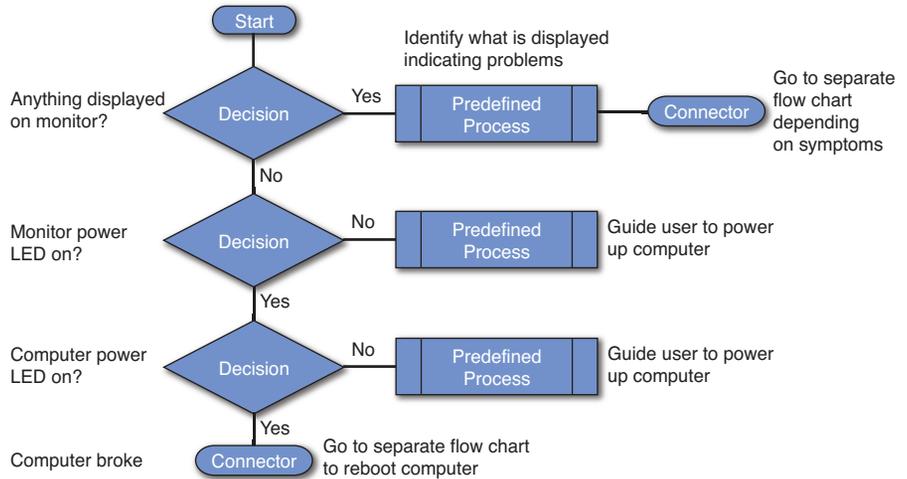
- **Actively thinking.** A person uses their intelligence, experience, knowledge, and skills to explore a problem and identify a solution.
- **Asking.** Critical thinkers often ask themselves questions about a problem or challenge, and then seek out the answer.
- **Changing perspectives.** Many problems are easily resolved by looking at them from a different perspective.
- **Evaluating evidence or symptoms.** The critical thinker is able to use reason to evaluate existing facts to come to a substantiated conclusion.

Many organizations use flow charts with simple yes and no questions or predefined procedures that technicians can use to identify problems, but creating these flow charts takes time and money, and they can’t be created for every possible situation. As an example, Figure 1-2 shows a simple flow chart that can be used when a user complains that the “computer broke.” The technician can ask simple questions such as “Do you see anything displayed on the monitor?,” “Do you see the

monitor power LED?,” and “Do you see the computer LED?.” Based on the user’s responses, the technician can then either ask more questions or follow a predefined process to resolve the problem. Admittedly, the flow chart shown in Figure 1-2 is simplistic, but many times the problems are simple. A simple flow chart helps technicians resolve these problems quickly.

FIGURE 1-2

Sample flow chart.



When the problems aren’t simple and flow charts aren’t available to assist the help desk technicians, critical thinking skills are important. Many complex problems have multiple symptoms, and help desk technicians are required to evaluate each of them and separate the relevant symptoms from the non-relevant symptoms. Critical thinking skills help them to evaluate a problem and compare it to past problems they’ve seen. They can then draw on their experience to troubleshoot and resolve different and more complex problems.

For example, imagine a user complains that a computer lost network connectivity. There are several possible reasons for the problem. It could be due to a physical issue, such as a cable break or a faulty network device (like a switch or router). It could be due to a faulty configuration on the computer or a network device. It could be that the user lost network connectivity to one network resource such as email, but assumed that all network connectivity was lost. The problem might be affecting a single user, a small group of users, or all of the users. Successful technicians use critical thinking skills to formulate questions, gather information, and determine what is relevant.

Many colleges and technical training providers offer critical thinking and problem solving courses to help students develop critical thinking skills. These courses can often be the most beneficial for students well beyond their college years because they help them to think on their own.

**ON THE SIDE:** A simple way to build critical thinking skills is to simply ask yourself questions on any topic that isn't completely clear to you. First, by writing the question in a coherent sentence, it forces you to identify what isn't clear. Then, by investigating the answer to your question, you end up learning the topic at a much deeper level. During this process, you might indeed come up with more questions, but if you write these down and answer them, you will learn and exercise your critical thinking skill abilities.

## Understanding Users

A primary purpose of help desk professionals is to support users. With this in mind, it's important to understand them. Different types of users have different needs and skillsets, and will have a wide variety of different problems. When the help desk understands the users, their common characteristics, and their needs, they are better equipped to help them.

As an example, an ISP providing end user support for customers recognizes that many of these customers use their computers for simple tasks such as accessing their email and browsing the Internet. Common problems for these users are computer configuration to access the Internet, ensuring the proper hardware is in place and is configured correctly, and possibly configuring basic applications for Internet use.

In contrast, employees within an organization use their computers for work tasks. Employees typically use basic applications such as email programs but might also use highly complex applications such as computer aided design (CAD) or data mining programs. These employees contact the help desk for assistance when they are unable to perform their work tasks due to a computer or network issue.

## User Categories

One way of understanding users is with user categories. User categories can vary widely, but some common categories are related to their knowledge level, the applications they use, and where they are using the computers.

When an organization understands the users, it can ensure that help desk technicians are prepared to help them. The organization is able to hire the technicians with the appropriate skill levels and provide the needed training to ensure these technicians provide the best possible support to the customers.

### Internal or External

One of the simple user categories is based on the user's relationship to the organization. Internal users work in the same organization as the help desk, and help desk personnel typically prioritize incidents based on the user requesting assistance.

For example, when an executive has an IT problem, this is often a high priority for the help desk. Similarly, if product sales is considered a critical business function, users working in the sales department might be given preferential treatment when they contact the help desk.

External users are customers of the organization. Often, an organization is selling some other product or service and the help desk technicians assist customers having a problem with the product or service. An ISP is an obvious example of help desk personnel assisting external users. As another example, an organization might sell an online application and then assist customers that have purchased the application. This assistance might be via email, chat, or phone.

### **IT Knowledge Level**

It's important to realize that just because users have computers, that doesn't mean they have intricate knowledge of how they work or how they are connected to networks. Some users grew up with computers in their home and have in-depth knowledge of computers and networks, while other users rarely use them and don't understand many of the details.

As an example, one help desk professional was working at an ISP assisting home users. Many home users installed wireless routers in their home, sharing Internet access among multiple users within their home, and they had a high level of IT knowledge. One day, a user from Virginia called and complained that he lost his Internet connection on his laptop computer. After some discussion, the technician discovered that the customer was a long-distance truck driver and was trying to connect his laptop computer from his current location in Oklahoma to his wireless network in Virginia. Experienced personnel working with computers know that wireless transmissions used within a house have a very limited range and certainly wouldn't travel from Virginia to Oklahoma. However, not everyone has that same level of knowledge, so it's important to gauge the user's knowledge level during a trouble call.

### **Computer Usage**

Another way of classifying users is based on how they use their computers. Some users operate a single application on their computer and rarely do anything else. Other users might have five or more applications open at any given time. By understanding common usage by help desk customers, the technicians have a better chance of predicting common problems. As an example, many home users run web browsers, email applications, and games, but do little else. These users have many common problems that typically aren't seen by an in-house help desk.

In contrast, employees within a company will typically run word processing, spreadsheet, database, email, and other applications. Additionally, many organizations have dedicated applications for specific purposes. For example, sales people within an organization might use software to check inventory, track sales, and

access customer information. Help desk personnel assisting these users need to have in-depth knowledge of these specialized applications so they can effectively help the users.

## Location or Environment

Identifying where the customer is using the computer also helps to understand the potential issues they might have. The two primary locations or environments are home and within an organization. Home users will typically have basic issues with their computers and a help desk will often provide generic support to them. Users within an organization will have issues related to the computers and applications used in support of the organization's mission. Internal users might have generic problems just as home users do, but they will also have specific issues related to accessing resources within the organization.

An additional location is mobile or remote. For example, personnel within a company might routinely travel as part of their job but still need access to the company network. Similarly, organizations might allow users to work from home. A common way these personnel access the network from remote locations is via a **virtual private network (VPN)**.

A VPN provides access to a private network through a public network such as the Internet, as shown in Figure 1-3. Once configured, remote users connect to the Internet via an ISP and are then able to connect to the organization's private internal network. In many cases, the VPN users are able to access resources through the VPN just as if they were accessing the private network from within the organization. It gives remote users access to the internal network from almost anywhere in the world, as long as they have Internet access. The primary issue for traveling or remote users is likely to be related to connecting to the company network through the VPN, so it's important for help desk personnel to understand what a VPN is and how it is configured within an organization.

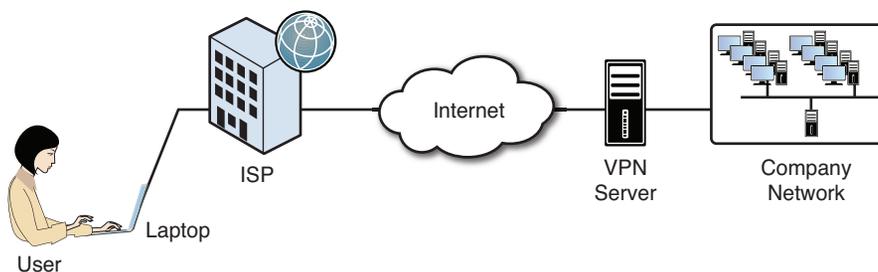


FIGURE 1-3

User accessing company network via a VPN.

## Services Provided to Users

Many users view the computer as a tool or resource they use to accomplish tasks. When computer problems prevent them from accomplishing these tasks and they can't resolve these problems on their own, they ask for help. There are many reasons why users call the help desk. Some of them include:

**ON THE SIDE:**

Many accounts have a limitation on how many times a user can enter an incorrect password. For example, an account lockout policy can lock out an account if the user enters the incorrect password five times in a short amount of time. This lockout policy can automatically unlock the account after some time, such as after 30 minutes, or require an administrator or help desk professional to unlock the account.

- **Logging on.** This can include problems related to a forgotten username or password, and locked accounts. Many organizations employ automated methods to assist external users, but they assist internal users directly. One common source of login problems is the CAPS LOCK key, which has been preventing successful logins for decades.
- **Asking for information.** Users often call the help desk for information about a product or service. Help desk technicians will typically have some knowledge about products and services and have the ability to transfer the user to another area of the company if necessary. For example, if a customer calls about a product and wants to order it, the technician can transfer the call to the sales department.
- **Starting an application.** Users sometimes have problems starting an application because they can't find it or due to a software issue. For example, if the application has a problem such as a corrupt file or incorrect configuration, it might not start properly and terminate with an error.
- **Installing or upgrading software.** When users are responsible for installing or upgrading operating systems and applications, they often need assistance. For example, users might have problems installing updates to the operating system or a specific program. Many times the instructions are available, but in some situations, the users simply can't find or understand the instructions. In other situations, their system has other problems preventing the instructions from succeeding.
- **Configuring or troubleshooting hardware.** If users are responsible for configuring or troubleshooting hardware, they might have problems and call the help desk for assistance. Printers often account for many hardware trouble calls within an organization, but other hardware problems related to mice, keyboards, hard drives, displays, sound cards, and speakers are common.
- **Using or performing a task with an application.** Many times users are unable to perform specific tasks within an application. For example, when an organization deploys a new email application, users might not be able to do familiar tasks and ask for assistance. In this example, the help desk calls can often be reduced by providing users training before the new application is deployed. Many organizations provide online documentation and possibly videos to answer the common questions and problems.
- **Accessing a network resource.** When users are unable to access a network resource such as the Internet, email, or any type of server, they will typically ask for help. The user's computer might be the source of the problem, or the problem might be elsewhere. For example, misconfiguration or failure of the user's computer network interface card (NIC) would prevent the user from accessing any network resource and the user's computer would need repairs. If a network device such as a switch or router failed, a user won't be able to access the resource, but the user's computer isn't at fault. Either way, help desk technicians are able to address the problem and take steps to resolve it.
- **Removing viruses or other malware.** Malware causes a wide variety of problems, including system slowdowns, random reboots, lost files, errors, and more. Ideally, users will have up-to-date antivirus software running on their systems to prevent infections, but when a system is infected, users often need assistance removing the malware.

- **Recovering data.** If you've never lost a file due to corruption, malware infection, or simply because you cannot locate it, you probably haven't been using computers for very long. Almost everyone has lost a file at some time or another. If the file is important, users might call for help recovering it. If the file is corrupt, technicians might be able to restore it using special file recovery tools. If the file is backed up, technicians might be able to restore it from a backup. If the file is not backed up, technicians can use the problem as a teaching opportunity to stress the importance of creating backups. Some people simply never back up their data until they lose important files.
- **Rolling back changes.** Users sometimes want to undo a change to their system. This might be uninstalling software, removing a recent operating system or application update, or rolling back a hardware driver. Operating systems and applications typically have methods to perform each of these tasks, but they are sometimes beyond the technical ability of common users.
- **Understanding errors and messages.** Cryptic errors and messages can overwhelm users. Many of these are unclear and users aren't sure if they should take action in response to them, or just ignore these errors and messages.

**ON THE SIDE:** It's possible to avoid many of these types of help desk calls with effective documentation. If users have access to clear documentation that is easy to find, many will use it instead of contacting a technician for help. This isn't universal, though. Many users choose instead to call for help first and check documentation later. Chapter 7 covers the importance of writing skills, including technical writing for different audiences. When users successfully get the information they need from documentation one time, they are more likely to use it again.

## Typical Incident Process

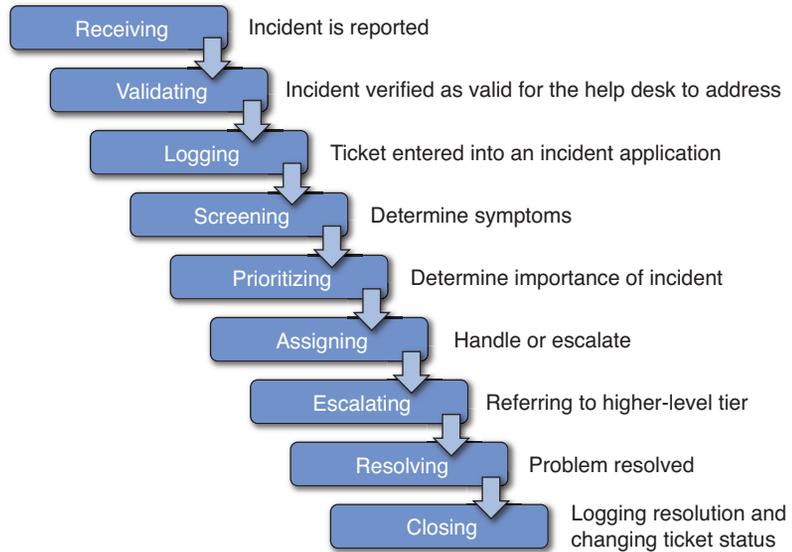
Most organizations have a formal process that technicians follow for any incident. An incident typically starts with a user reporting an issue and ends with a help desk technician closing it after the issue is resolved. However, there are many steps between the first and last step.

### Steps in a Typical Incident Process

While not every organization uses the same process to manage incidents, there are many similarities between different processes. Organizations define the process internally and might combine or omit steps based on their needs. However, by reviewing a typical incident process, you are able to identify many of the common elements. As an introduction, Figure 1-4 shows the steps in a typical incident process and the following sections describe them in more depth.

FIGURE 1-4

Typical steps in an incident process.



## Receiving Incidents

In the first step, the help desk receives the incident from a user reporting it. The method of reporting could be in person or via telephone, email, a chat page, or a web-based reporting tool.

When users report the incident via telephone, many organizations record the entire conversation. From a legal perspective, the organization normally has a requirement to notify users that the conversation is being recorded, and many automated help desk phone systems notify users prior to connecting them with technicians. Many electronic methods such as chat pages and web pages include a legal statement with a requirement for the user to check a box agreeing to the process.

One of the most important elements of success when receiving an incident is to respond appropriately and begin to establish rapport. Users often don't have the right words to report the issue, so they might need to be coaxed into providing all the relevant information. Creating a friendly, helpful atmosphere will help the technician during the process.

Consider if you called your ISP for help and a technician responded with one of the following two phrases:

- “What do you want?”
- “Hello. My name is Sally. How can I can help you?”

Many people would likely respond with anger from the first greeting while the second greeting is warm and indicates a sincere desire to help. While this is obvious when you read it, it isn't so obvious to all help desk technicians on the job. Organizations often provide help desk professionals with a script when starting a conversation, giving them the words to let the customer know they are there to help. For example, at least one ISP has their technicians answer the phone with

these words: “Hello. My name is \_\_\_\_ and I can help you.” Help desk technicians will typically memorize the greeting after repeating it a few times so they don’t have to keep reading it.

Similarly, when communicating with users via email or chat pages, technicians often have pre-created scripts that they can cut and paste into the email or chat pages. These scripts typically include a greeting such as hello, an introduction including the technician’s name, and an offer to help. In the technician’s first response, they will typically include words expressing empathy along with confirmation that they can help. For example, they might say, “I’m sorry you’re having problems but I can help you resolve this.”

## Validating Incidents

After the initial greeting, the customer reports the problem they are having. In this phase of the call, the technician attempts to verify it is a valid incident that the help desk should address, or if the call should be referred elsewhere.

Many organizations include an authentication procedure in this phase to ensure that the help desk is authorized to help the user. For example, an ISP help desk assists ISP customers so one of the first things that the technician does is to verify the customer’s identification number. Automated phone systems often verify the customer’s identification number prior to forwarding the call to a technician.

Organizations need to have clear guidelines in place on what support help desk technicians should provide. For example, if the help desk technicians are providing help to internal employees, they typically assist users with any type of problem with their computer or other IT resources.

In contrast, ISP help desk technicians only assist customers with IT problems related to the services provided by the ISP. For example, ISP technicians would assist customers having problems accessing the Internet through the ISP. However, users calling with a problem related to their printer would be told that the ISP does not provide that type of assistance.

Many organizations include a listing of items that the help desk will not support. For example, the following list could be used within an organization to ensure help desk personnel focus on supported incidents:

- The help desk does not provide support for employee’s personal computing devices. This includes home computers, laptops, tablets, and smartphones.
- The help desk does not provide support for any software products that were not approved by and purchased by our company.

Telling a customer “no” can be sensitive, and pre-defined scripts are useful to give technicians phrases that respectfully communicate the company policy to the customer. While technicians might think it’s funny that an ISP customer would call for help with their printer, it wouldn’t be appropriate to laugh. Instead, technicians would typically express empathy and then explain why they are unable to help with

### ON THE SIDE:

Organizations often have very strict rules governing the purchase of software. While this does help control purchase costs, a bigger issue is support of the software. Approved software requires support and this often requires training of IT personnel to ensure they know how to install, configure, troubleshoot, and maintain it.

words such as this: “I’m sorry you’re having problems with your printer but we can only provide assistance related to the services we provide. I’d suggest you contact the printer manufacturer.”

## Logging Incidents

Once technicians validate calls as actual incidents, they begin the process of logging them. A logged incident is also known as a **ticket**, or **service ticket**. Most organizations have applications to open, track, and close tickets through front end data entry screens, with all the data stored in a back-end database. These applications ensure proper data is entered and make it easy to track the incident through its lifetime.

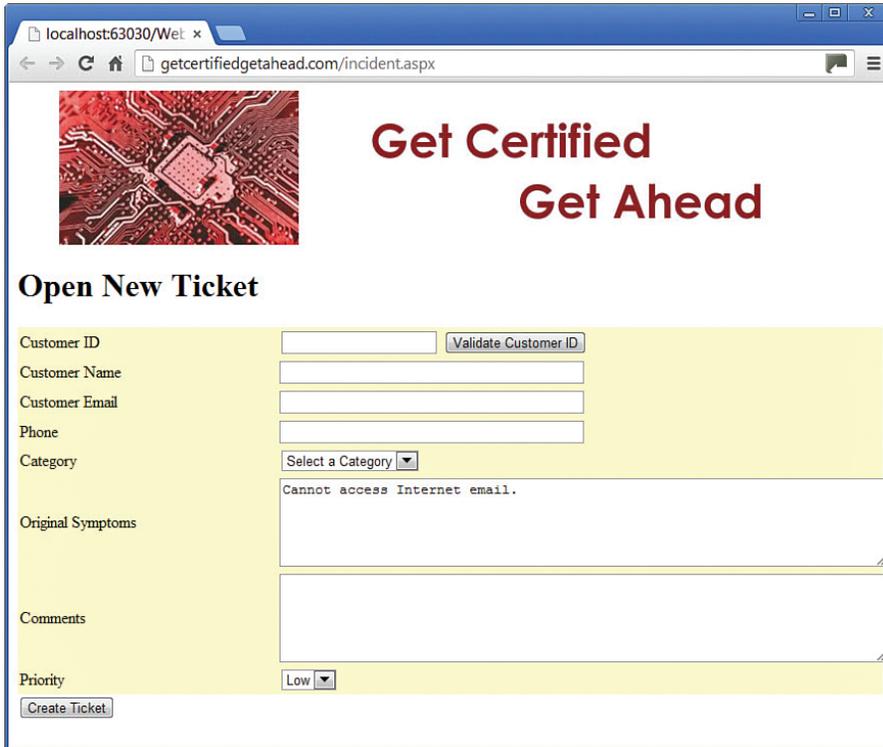
### **AUTHOR’S NOTE:**

Some organizations host web sites where users can create the ticket themselves. This is very popular among organizations that support products and services sold over the Internet. The user logs onto the website and creates the ticket. In these situations, technicians receive and validate tickets after customers log them.

Organizations using help desk software decide what information is required when logging the incident prior to deploying it. Some common customer data is name, email address, phone, and a customer ID if used. Next, a subject or category selection categorizes the incident. For example, technicians can categorize incidents as operating system problems, hardware problems, or network access problems.

A ticket also has a comment or remarks section where the technician can enter notes about the problem, and some ticket systems include an additional section to enter the original symptoms. It’s possible for symptoms to change while troubleshooting and clearly logging the original symptoms helps keep technicians on track. The technician’s ability to write clearly and concisely is extremely important in this step.

Some ticket systems allow the technicians to enter the data in any order. For example, Figure 1-5 shows an example web-based ticket system. Help desk technicians access this system with a web browser and are able to enter the information as the user is talking. In the figure, you can see that the technician is able to enter symptoms from the customer first, but can later enter the customer ID and other customer information. This allows the technician to listen to the customer and gather some information without forcing the user to answer a series of questions. This is especially useful if a customer has been waiting on the phone for a while and finally is able to talk to a technician. After the user explains the problem, the technician can say something like, “I understand, and we can help you with this. In case we get cut off, I want to make sure I have all your information. Can I ask you a couple of questions?” The technician then fills in the other necessary data such as the Customer ID.



The screenshot shows a web browser window with the address bar displaying 'localhost:63030/We...'. The page title is 'getcertifiedgetahead.com/incident.aspx'. The main heading is 'Get Certified Get Ahead' in large red font. Below the heading is a red-tinted image of a circuit board. The form is titled 'Open New Ticket' and contains the following fields and controls:

- Customer ID: Text input field with a 'Validate Customer ID' button.
- Customer Name: Text input field.
- Customer Email: Text input field.
- Phone: Text input field.
- Category: Dropdown menu with 'Select a Category' and a downward arrow.
- Original Symptoms: Text area containing the text 'Cannot access Internet email.'
- Comments: Text area.
- Priority: Dropdown menu with 'Low' and a downward arrow.
- 'Create Ticket' button at the bottom left.

FIGURE 1-5

Example of web-based ticket creating system.

In contrast, some systems force customers to enter an account number through the automated voice mail system, but the account number is just used to authenticate the user and isn't used for further reference. After the customer waits 15 minutes or so to talk to a live person, the technician begins asking a series of questions such as account number, customer name, customer email, and so on. This often just frustrates the customer further.

When planning the process for a help desk, it's important to think about the customer's perspective. The immediate issue for the customer is the problem at hand. When the customer is forced to repeat customer data multiple times, it becomes very tedious and frustrating. For example, some help desk procedures force the customer to enter identifying data such as an account number when first calling an automated phone system. Then when a technician takes the call, the technician asks for this information again to verify the caller is a customer. Later, after the technician realizes the incident should be logged, the technician once again asks the customer for this information to enter it into a ticket. Customers can get so frustrated they want to reach through the computer and take out their frustration on the technician, as shown in Figure 1-6.

FIGURE 1-6

Ineffective logging systems can frustrate customers.



One of the most efficient methods of using a ticket system combined with an automated phone system is to ensure that they are integrated with one or more databases. The phone system prompts the caller to provide a customer number, and it validates the customer number against a customer database. The phone system only forwards calls to the help desk that are from valid customers. When the phone system forwards a call to the technician, it populates the ticket with the customer ID, along with the customer's name, email, phone number, and so on. Looking at Figure 1-5, the technician would see the ticket with most of the information filled in and can then focus on the problem.

In some cases, the user has a simple question that the technician can easily answer in less than a minute. Should the technician create a ticket for this? It depends. Most ticket applications include analysis capabilities. Management can review them periodically to extract quantifiable data and measure the performance of the help desk. However, if technicians are not creating tickets consistently, this data is not reliable. Consider these two scenarios:

First, imagine a star technician that quickly resolves user issues without taking much time at all. Without clear guidance from management, this gifted technician might not log most of these incidents, thinking that they are trivial and not worth logging. In contrast, another technician without the same level of expertise might help customers with the same types of problems, but take much longer before he can resolve them. When management later analyzes the incident logs, it might look as if the gifted technician is doing significantly less work than other technicians are, even though he is solving more customer problems.

In the second scenario, imagine that a specific user has extremely limited IT knowledge and is calling the help desk almost daily asking for help. The problems are easy to solve so technicians do not log them, but it still takes time for technicians to assist this user creating an overall help desk backlog. Help desk management might ask senior leadership for a budget increase to hire a new help desk technician. However, if these logs are analyzed, it would indicate that the help desk has enough technicians, but the technicians are not clearing many tickets.

Organizations should make it clear to technicians when to create a ticket and when tickets shouldn't be created. Junior technicians don't always understand the big picture of an organization, or even how budgets work, and without clear guidance, technicians will log tickets inconsistently. It does take time to log all problems, and technicians might think they are helping the organization by helping more customers without logging the incidents.

There aren't any rules that work for all organizations on what incidents to log. However, the key is that management needs to make a decision and communicate it to the technicians. If technicians don't have guidelines on what incidents to log, each technician will make their own decisions and these decisions might not match the goals of the organization.

## Screening Incidents

Once the technician begins logging the incident, the screening phase begins. During this phase, the technician asks a series of questions about the problem. Both effective questioning techniques and active listening techniques go a long way in this step (Chapter 2 goes into these techniques in much more depth).

When screening the incident, the goal is to get the actual symptoms. Based on the symptoms, technicians determine if this is a problem they should be helping the customer with, or if they need to escalate it. Here are some examples of complaints from a customer and responses by the help desk technician:

- Customer: "The Internet is down."
- Technician: "What are you trying to do that isn't working?"
  
- Customer: "Why doesn't my printer work?"
- Technician: "I'm not sure. What is happening when you try to print?"
  
- Customer: "My computer keeps crashing."
- Technician: "That doesn't sound good. Can you explain what it does when it crashes?"
  
- Customer: "My account is locked and I can't log on. Can you help?"
- Technician: "I'm sorry you're having problems. I cannot unlock it, but I can connect you with technicians that have permissions to do so."

In the first three issues, the problem is very likely one that the help desk technician can help the customer resolve so the technician begin asking more questions about the problem. However, in the fourth example, the technician doesn't have adequate privileges to resolve the problem and must escalate it.

## Prioritizing Incidents

Some incidents are extremely important while others are not. Most ticketing systems include the ability to assign a priority to an incident and organizations clearly define the different priorities. There isn't a universal definition that applies to all organizations, but many use simple low, medium, and high priorities.

High-priority incidents indicate problems or issues that are affecting a significant number of users and are affecting one or more mission-critical functions or services. **Mission-critical functions** or services are those that are integral to the organization performing their core business. For example, a company that primarily sells products online through a website would consider all the functions and services of the website as mission critical. This could be the website server, access to back-end database or any other services needed by the website applications, and Internet connectivity. Similarly, an ISP might consider an outage affecting hundreds of users as a high-priority issue.

Medium priority incidents prevent a single user from performing mission-critical functions or services. If a user's computer fails but the user is still able to perform tasks on another computer, it wouldn't meet this definition. Another possibility of a medium-priority issue is if an issue degrades the performance and reliability of several IT mission-critical IT services. For example, if a router failed on a network, the network might remain operational using alternate paths, but the increased traffic on these alternate paths could significantly slow down the network.

Low-priority incidents indicate issues affecting a single user or issues that are degrading the performance and reliability of non-mission-critical IT services. For example, it would be a low priority if a single user was unable to access email on one computer but can access email on another computer.

## Assigning Incidents

Typically, the help desk technician that receives the call will follow it through to completion. However, if the technician doesn't have the expertise or permissions to resolve the problem, it might be necessary to assign the incident to another technician. In some cases, the technicians refer the incident to another help desk technician who has specialized experience and knowledge for the problem. In other cases, the technician might need to escalate the issue to a higher-level tier.

## Escalating Incidents

If technicians cannot resolve a problem, they escalate it by sending it to a higher-level tier. There are two primary reasons why help desk technicians escalate a problem:

### ON THE SIDE:

Organizations can use any type of priority definition that meets their needs. For example, instead of High, Medium, and Low, they can use 1, 2, and 3. Similarly, instead of three levels, they can use five levels such as Critical, High, Medium, Low, and Routine. The key is that the organization has defined the priority levels and trained help desk professionals on their definitions.

1. The technician runs out of ideas to resolve the problem. For example, the problem might be beyond the technician's expertise level. By escalating the problem to a higher tier, a more experienced technician is able to resolve the problem for the user.
2. The technician doesn't have adequate privileges to resolve the problem. For example, the technician might realize that an account needs to be created on a server but the technician doesn't have the required privileges to create the account. Technicians at higher tier levels have progressively more privileges.

Help desk supervisors will typically monitor escalated incidents closely. If technicians are constantly escalating simple problems due to a lack of privileges, the supervisor can facilitate an increase in privileges for the technicians. This allows the problem to be resolved quicker, ensures customers are satisfied quicker, and requires less work for the upper tier levels. Additionally, if a single technician is escalating significantly more incidents than other technicians are, this technician might need additional training.

## Resolving Incidents

Once the organization addresses the incident completely, it is considered resolved. In most situations, this indicates that the customer's question or problem has been answered or solved. For example, a customer reports a problem accessing the Internet, and the help desk is able to assist the customer to restore their access.

In some cases, the customer might not be satisfied but the incident is still resolved. For example, a customer might want to perform a specific task with an application and request assistance to achieve his goal. After investigating, the help desk might discover that the application doesn't include the desired feature and communicates this to the customer. The customer might not be happy with the answer, but help desk personnel have done all they can to resolve the problem.

## Closing Incidents

Technicians close the incident once the incident is resolved. This typically involves logging the resolution into the incident software and selecting the option to close it. Closed incidents are usually still accessible to help desk personnel. This way if a customer calls back after a short time, they can easily view the history and reopen it if necessary.

Help desk personnel are often provided with a script to close the ticket. For example, they might ask "Is there anything else I can help you with today?." The goal is to ensure that customers have what they need and will not be calling back in a short time.

## Tracking Incidents

While most organizations recognize the need for help desks, they also want to ensure that the costs are justified. One of the primary methods of justifying costs

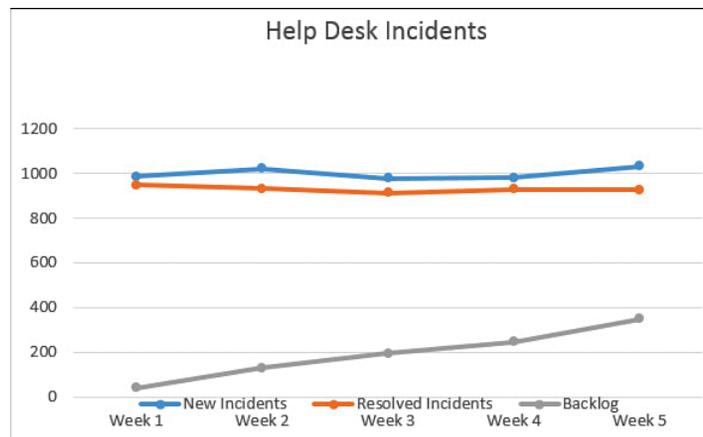
is through metrics. A **metric** is a method of measuring something and it provides quantifiable data used to gauge the effectiveness of a process.

Some of the common metrics used to measure the effectiveness of a help desk are:

- **New incidents.** This identifies the workload imposed on the help desk team.
- **Resolved incidents.** Ideally, the help desk team should be closing about the same number of incidents as they receive. If not, it indicates there aren't enough qualified technicians to handle the workload or the technicians are not able to focus on help desk workload.
- **Backlog.** The backlog is simply the number of new incidents minus the resolved incidents. If the number of resolved incidents is consistently less than the number of new incidents, the backlog will continue to grow. Figure 1-7 shows a graph displaying new incidents, resolved incidents, and the backlog over a few weeks. Management personnel reviewing this graph can easily see that that backlog is steadily climbing and address the problem before it gets too serious.

FIGURE 1-7

Example graph of new incidents, resolved incidents, and backlog.



- **Reply time.** The reply time might indicate how long it takes a customer to get a response from an email or Internet-based help desk system, or how long it takes them to talk to a live help desk technician, depending on how the help desk is set up. Ideally, users will receive a quick response to let them know the incident has been received and will be worked on. If this is too long, customers will quickly become dissatisfied.
- **First resolution time.** The time between the initial incident report and its resolution is the resolution time. A challenge with this metric is that some help desk supervisors encourage technicians to resolve problems as quickly as possible so that they can help other customers. However, if the technician rushes to a resolution, the customer might not be fully satisfied and might call back.
- **Final resolution time.** Some tickets are closed prematurely, indicating a quick first resolution, but the customer soon calls back because the problem hasn't been resolved. Technicians reopen the original ticket and keep it open until it is truly resolved. Gaps between the first resolution time and the final

resolution time indicate problems that management needs to investigate. For example, if one technician has a high number of tickets that other technicians are reopening when the customer calls back, it indicates the technician is not successfully helping the customers before closing the ticket the first time. This is adding additional workload onto the help desk.

- **Customer satisfaction.** The ultimate goal of the help desk is to meet the needs of the customers and you can determine this by having customers fill out short surveys and report their satisfaction with the service.
- **Technician performance.** Performance of individual technicians can be measured based on how many tickets they resolve, how many tickets they resolved but were reopened due to the customer calling back, and satisfaction ratings from the customers. Technicians with lower metrics might need additional training while technicians with superior metrics might be ready to move up to tier 2 or a help desk supervisor or management position.

## Taking Ownership of Incidents

Successful help desk specialists (and employees at any job) can often enjoy great success by implementing a simple philosophy of problem ownership. The most successful technicians are diligent, tenacious, and focus on resolving all the details of an incident with a dedication to excellence. From a broader perspective, these same traits contribute to the success of people at any job.

In contrast, some technicians see incidents as problems and focus on transferring them rather than resolving. If customers are lucky, they will eventually be transferred to a technician that will take ownership of the incident and follow it through to resolution. If not, the customer will likely experience a high level of frustration and associate the bad experience with the company name.

However, this requires the organization to allow technicians to stick with a problem. Some large organizations have policies in place where technicians stick with the customer even as they transfer customers to a different area of the organization. In contrast, some large organizations have policies in place where technicians simply transfer the customer, forget about the issue, and move on to the next problem.

Here are two examples.

In one situation, I called Verizon asking for assistance with my iPad and its Internet access through the Verizon cellular network. The technician wasn't able to resolve the problem but recognized that sales personnel could resolve it. However, instead of just transferring the call, she contacted the sales personnel, explained the problem to them, and then brought them onto the line to help me. The sales personnel couldn't completely resolve the problem but instead needed to transfer me to another area. Ultimately, I was on the line for over an hour and was transferred three different times, but this technician was with me every step of the way. She expressed empathy at the difficulty we were having at resolving the problem and even though the problem wasn't completely resolved, I still ended the call with the feeling that she did everything she could.

At another time, I called a different company related to an issue I was having. I was transferred four times and each time I had to identify myself and explain the problem again. By the time I reached the fourth technician, I was extremely frustrated at the company's customer service. The technician spoke with an accent and after I told him I was having problems understanding him, he suggested I call back.

While I certainly applaud the technician in the first scenario due to her customer service capabilities, I can't completely fault the technicians in the second scenario. The company procedures were apparently reinforcing the technician actions of referring problems rather than solving them.

If a company is able to implement a simple philosophy of encouraging technicians to take ownership of problems, it can significantly increase customer satisfaction. It also places the onus of resolving the problem on the first technician that receives it. Management is better able to identify technicians that do not have the skills to resolve problems but instead transfer them whenever possible.

## Chapter Review Activities

Use the features in this section to study and review the topics in this chapter.

### Answer These Questions

- Which of the following statements is MOST accurate when referring to an internal IT help desk?
  - It is a profit center and highly valued in almost all organizations.
  - It is a cost center and highly valued in almost all organizations.
  - It is a profit center and its value must be justified.
  - It is a cost center and its value must be justified.
- Of the following choices, what is the best definition of an incident?
  - Process of dealing with failures, questions, or queries reported by the users
  - Process of dealing with issues automatically detected and reported by event monitoring tools
  - An unplanned interruption to an IT service or reduction in the quality of an IT service
  - Dealing with technical issues by technical staff
- Of the following choices, what is the best definition of incident management?
  - An unplanned interruption to an IT service
  - Process of dealing with failures, questions, or queries reported by the users
  - Failure of a configuration item that has not yet affected a service
  - A reduction in the quality of an IT service
- What is the primary focus of help desk personnel in a large IT department?
  - Maintain and configure servers
  - Maintain and configure routers
  - Provide support to end users
  - Install and update antivirus software
- Which of the following is NOT a typical division in a large IT department?
  - Help desk
  - Training
  - Infrastructure
  - Security

6. Which technical support tier assists users?
  - a. Tier 1
  - b. Tier 2
  - c. Tier 3
  - d. Tier 4
  
7. Which of the following BEST describes an SLA?
  - a. An agreement with external organization that stipulates a performance expectation
  - b. An agreement with internal organization that stipulates a performance expectation
  - c. A tier 1 agreement between the help desk and customers
  - d. A tier 1 agreement between the help desk and vendors
  
8. Of the following choices, what service would help desk personnel rarely provide?
  - a. Recover data
  - b. Upgrade a server
  - c. Remove malware
  - d. Troubleshoot network problems
  
9. What skillsets are required for help desk technicians? (Choose the MOST correct answer.)
  - a. Technical skills
  - b. Soft skills
  - c. A mix of hard skills and soft skills
  - d. Hard skills
  
10. Which of the following is a typical soft skillset that successful help desk technicians possess?
  - a. Technical skills
  - b. Business skills
  - c. Security skills
  - d. Communication skills
  
11. Which of the following is a typical soft skill that successful help desk technicians possess?
  - a. Writing
  - b. Troubleshooting
  - c. Implementing security
  - d. Using business tools

12. An organization uses flow charts to assist technicians resolve problems. However, a technician has identified a problem but a flow chart is not available to help him resolve it. What should the technician do next?
- Escalate the problem.
  - Report the lack of a flow chart to management.
  - Use troubleshooting skills to resolve the problem.
  - Document the resolution in the organizations incident database.
13. Of the following choices, what is the MOST likely problem that remote users of a large organization will likely have?
- Connecting via an organization's LAN
  - Connecting via an organization's VPN
  - Updating their computer
  - Replacing their hardware
14. Of the following choices, what is the MOST likely reason a help desk professional would escalate a problem?
- Customer is angry
  - Problem requires in-depth knowledge
  - Customer lacks adequate privileges
  - Technician lacks adequate privileges
15. At which step of an incident is a user typically authenticated as a valid help desk customer?
- Screening
  - Validating
  - Prioritizing
  - Escalating
16. Of the following choices, what is the best method of determining the overall effectiveness of a help desk?
- Identifying the costs
  - Identifying the net revenue
  - Asking the help desk technicians
  - Using metrics
17. How is the backlog typically measured for a help desk?
- Subtracting new incidents from resolved incidents
  - Subtracting resolved incidents from new incidents
  - Subtracting first resolution time from final resolution time
  - Subtracting final resolution time from first resolution time

18. Of the following choices, what is the best metric to determine the overall effectiveness of a help desk?
- a. Final resolution time
  - b. Backlog
  - c. Customer satisfaction
  - d. Resolved incidents
19. When is an incident closed?
- a. When it has been resolved to the customer's satisfaction.
  - b. When it has been resolved to the best ability of the organization.
  - c. When the customer chooses to do so.
  - d. When the technician stops working with the customer.
20. Of the following choices, what is a simple working philosophy technicians can implement that contributes to their success and the success of the help desk?
- a. Closing as many incidents as possible
  - b. Working with as many customers as possible
  - c. Escalating as many incidents as possible
  - d. Take ownership of incidents as much as possible

## Answers and Explanations

1. **d.** An internal IT help desk is a cost center and its value must be justified. It does not generate any revenue so it is not a profit center. Further, because it does not generate revenue, its value is often questioned.
2. **c.** An incident is defined by ITIL as “an unplanned interruption to an IT service or reduction in the quality of an IT service. Failure of a configuration item that has not yet impacted service is also an incident, for example, failure of one disk from a mirror set.” The other answers refer to incident management.
3. **b.** An incident is defined by ITIL as a “process of dealing with all incidents; this can include failures, questions, or queries reported by the users (usually via a telephone call to the Service Desk), by technical staff, or automatically detected and reported by event monitoring tools.” The other answers refer to an incident.
4. **c.** The primary focus of help desk personnel in a large IT department is to provide support to end users. Many IT departments have administrators that maintain and configure services, as well as network infrastructure devices such as routers. These administrators might also be responsible for security tasks such as installing and updating antivirus software, or the organization might have dedicated security personnel handling this task.
5. **b.** A training division is not a typical division in an IT department. However, help desk personnel often provide training to users, and other help desk personnel. Help desk personnel assist users. Infrastructure technicians maintain network resources such as routers and switches. Security personnel implement and maintain measures to prevent IT security incidents and detect them when they occur.

6. **a.** Tier 1 is the first line of support for users. Tiers 2 and 3 are higher-level tiers within an organization. Some organizations identify tier 4 as an external entity.
7. **a.** A service level agreement (SLA) is an agreement with an external organization that stipulates a performance expectation. A memorandum of understanding (MOU) or memorandum of agreement (MOA) is typically used between entities within an organization instead of a SLA. When SLAs are used, they are often referred to as tier 4 support.
8. **b.** Help desk personnel would typically provide all the services mentioned except for upgrading a server. Other administrators would manage and maintain servers. Internal help desk personnel are regularly called upon to recover data and remove malware. Both internal and external help desk personnel will troubleshoot network problems preventing a user from accessing network resources.
9. **c.** It's important for help desk technicians to have a mix of both hard skills and soft skills. Without hard skills (measurable technical skills), they will be unable to troubleshoot and resolve problems. Without soft skills, they will be unable to communicate effectively to customers and within the organization.
10. **d.** Communication skills are one of the important soft skillsets required of successful help desk technicians so that they can communicate with customers. The other skills are also required but are hard skills, not soft skills.
11. **a.** Writing is a soft skill that is required of help desk technicians so that can accurately enter information such as problem symptoms and problem resolutions into an organization's incident database. The other skills listed are hard skills.
12. **c.** The technician should use troubleshooting skills to resolve the problem. It is unlikely that an organization will have flow charts for all problems, so technicians should be able to think on their own in some situations. The technician should attempt to troubleshoot the problem before escalating it. Operating procedures might require the technician to report the lack of a flow chart to management, but not before troubleshooting it. The resolution cannot be documented until it is resolved.
13. **b.** Remote users typically connect via a virtual private network (VPN) and this is the most likely problem they will have of the given choices. Remote users will not connect via the organization's local area network (LAN) to the remote location. Updating a computer and replacing hardware isn't a common occurrence and if there is a need, users can typically have it done by coming into the primary work location.
14. **d.** Help desk professionals escalate problems when they lack adequate privileges to resolve a problem. Technicians escalate the problem to the level where technicians have the appropriate privileges. Successful technicians can still help a customer, even if the customer is angry about the situation. Help desk professionals typically have in-depth knowledge about the systems they support. The privileges of the customer aren't relevant to a help desk professional resolving a problem.
15. **b.** Users are typically authenticated as valid customers in the validating step. During screening, the technician attempts to get more information on the incident, such as additional symptoms. Next, the technician prioritizes the incident based on the available information. Technicians escalate incidents if they are not able to resolve them.
16. **d.** Metrics (such as the backlog and customer satisfaction ratings) are used to measure the effectiveness of a help desk. The costs vary widely depending on customer needs and how many customers are served. A help desk is a cost center and doesn't generate revenue. Help desk technicians working at the help desk are not the best source to determine its effectiveness.

- 17. b.** The backlog metric is calculated as new incidents minus resolved incidents (or subtracting resolved incidents from new incidents). Subtracting new incidents from resolved incidents would almost always give a negative number unless both are equal. Resolution times refer to the amount of time it takes to help customers and is not related to backlog.
- 18. c.** Customer satisfaction is the best metric to determine the overall effectiveness of a help desk and is often measured by having customers complete short surveys. The final resolution time can be compared with the first resolution time to identify if tickets are closed prematurely but isn't the best measure of help desk effectiveness. The backlog compares new incidents and resolved incidents to determine if the workload demand is being met, but without knowing customer satisfaction it doesn't determine the overall effectiveness.
- 19. b.** An incident is closed when the organization has addressed it completely to the best ability of the organization. Customers are not always satisfied because they might not be able to get the help they want simply because the organization cannot provide it. Some help desk ticket systems allow customers to close the ticket, but this isn't true for all tickets. A technician might escalate an incident or go off duty and turn it over to another technician, but this is not a reason to close an incident.
- 20. d.** A philosophy of taking ownership of problems can elevate technicians above others when working on the help desk or anywhere. Just closing incidents isn't as important because they can be closed prematurely. Working with more customers isn't as important because it can result in rushed assistance with one customer, while looking forward to working with the next customer. Escalating an incident is simply handing it off to someone else and should be minimized whenever possible.

## Define the Key Terms

The following key terms include the ideas most important to the big ideas in this chapter. To review, without looking at the book or your notes, write a definition for each term, focusing on the meaning, not the wording. Then review your definition compared to your notes, this chapter, and the glossary.

### Key Terms for Chapter 1

business skills	Internet service provider (ISP)	service level agreement (SLA)
cost center	malware	technical skills
escalate	metric	technical support
help desk	profit center	ticket
incident	security skills	troubleshooting skills
incident management		

## List the Words Inside Acronyms

The following are the most common acronyms discussed in this chapter. As a way to review those terms, simply write down the words that each letter represents in each acronym.

## Acronyms for Chapter 1

ARPANET	ITIL	OGC
CAD	LAN	PC-DOS
DoS (as in DoS attack)	MAN	POTS
DOS	MOA	RAID-1
ISP	MOU	SLA
ISDN	MS-DOS	VPN
IT	NIC	WAN

## Create Mind Maps

For this chapter, create mind maps as follows:

1. Create a mind map to outline the possible divisions of a large IT department. Start with a circle labeled “IT Department,” draw lines outward from the circle, and label these lines with common IT divisions. Next, add notes identifying the responsibilities of these divisions.
2. Create a mind map to list the common tiers or levels of support provided by IT departments. List the knowledge and/or experience level required by technicians at each level.
3. Create two separate mind maps to list the skills required by successful help desk technicians. Use one to list the common technical or hard skills and use the second mind map to list the soft skills.
4. List as many of the steps in a typical incident process as you can remember. After you’ve listed them, place them in order from the beginning of an incident until the end.

## Define Other Terms

Define the following additional terms from this chapter, and check your answers in the glossary:

denial of service (DoS) attack	memorandum of understanding (MOU)	mission-critical functions or services
local area network (LAN)	metropolitan area network (MAN)	virtual private network (VPN)
memorandum of agreement (MOA)		wide area network (WAN)

## Case Studies

### Case Study 1

Use the Internet to search “incident” and “incident management.” Define each of these terms using information you find from reliable sources on the Internet.

### Case Study 2

Perform a search on the Internet using the term “help desk priorities.” List and compare the priority levels used by at least two organizations and their definitions. Notice that there isn’t a single definition used universally. Some organizations use numbers, some use words, and they often have anywhere between three and five priority levels.

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