Chapter 3
Business Continuity Planning

THE CISSP TOPICS COVERED IN THIS CHAPTER INCLUDE:

- ✓ **Domain 1.0: Security and Risk Management**
  - 1.7 Identify, analyze, assess, prioritize, and implement Business Continuity (BC) requirements
    - 1.7.1 Business impact analysis (BIA)
    - 1.7.2 External dependencies
- ✓ **Domain 7.0: Security Operations**
  - 7.13 Participate in Business Continuity (BC) planning and exercises

Despite our best intentions, disasters of one form or another eventually strike every organization. Whether it's a natural disaster such as a hurricane, earthquake, or pandemic, or a person-made calamity such as a building fire, burst water pipe, or economic crisis, every organization will encounter events that threaten their operations or even their very existence.

Resilient organizations have plans and procedures in place to help mitigate the effects a disaster has on their continuing operations and to speed the return to normal operations. Recognizing the importance of planning for business continuity (BC) and disaster recovery (DR), ISC2 has included these two processes in the objectives for the CISSP program. Knowledge of these fundamental topics will help you prepare for the exam and help you prepare your organization for the unexpected.

In this chapter, we'll explore the concepts behind business continuity planning (BCP). Chapter 18, “Disaster Recovery

Planning," will continue the discussion and delve into the specifics of the technical controls that organizations can put in place to restore operations as quickly as possible after disaster strikes.

Planning for Business Continuity

Business continuity planning (BCP) involves assessing the risks to organizational processes and creating policies, plans, and procedures to minimize the impact those risks might have on the organization if they were to occur. BCP is used to maintain the continuous operation of a business in the event of an emergency. The goal of BCP planners is to implement a combination of policies, procedures, and processes such that a potentially disruptive event has as little impact on the business as possible.

BCP focuses on maintaining business operations with reduced or restricted infrastructure capabilities or resources. As long as the continuity of the organization's ability to perform its mission-critical work tasks is maintained, BCP can be used to manage and restore the environment.

Business Continuity Planning vs. Disaster Recovery Planning

CISSP candidates often become confused about the difference between business continuity planning (BCP) and disaster recovery planning (DRP). They might try to sequence them in a particular order or draw firm lines between the two activities. The reality of the situation is that these lines are blurry in real life and don't lend themselves to neat and clean categorization.

The distinction between the two is one of perspective. Both activities help prepare an organization for a disaster. They intend to keep operations running continuously, when possible, and recover functions as quickly as possible if a disruption occurs. The perspective difference is that business continuity activities are typically strategically focused at a high level and center themselves on business processes and operations. Disaster recovery plans tend to be more tactical and describe technical activities such as recovery sites, backups, and fault tolerance.

In any event, don't get hung up on the difference between the two. It's much more important that you understand the processes and technologies involved in these two related disciplines.

You'll learn more about disaster recovery planning in Chapter 18.

The overall goal of BCP is to provide a quick, calm, and efficient response in the event of an emergency and to enhance a company's ability to recover from a disruptive event promptly. The BCP process has four main elements:

- Project scope and planning
- Business impact analysis
- Continuity planning

- Plan approval and implementation

The next four sections of this chapter cover each of these phases in detail. The last portion of this chapter will introduce some of the critical elements you should consider when compiling documentation of your organization's business continuity plan.

The top priority of BCP and DRP is always *people*. The primary concern is to get people out of harm's way; then you can address IT recovery and restoration issues.

Project Scope and Planning

As with any formalized business process, the development of a resilient business continuity plan requires the use of a proven methodology. Organizations should approach the planning process with several goals in mind:

- *Organizational review:* Perform a structured review of the business's organization from a crisis planning point of view.
- *BCP team selection:* Create a BCP team with the approval of senior management.
- *Resource requirements:* Assess the resources available to participate in business continuity activities.
- *External dependencies:* Analyze the legal and regulatory landscape that governs an organization's response to a catastrophic event.

The exact process you use will depend on the size and nature of your organization and its business. There isn't a “one-size-fits-all” guide to business continuity project planning. You should consult with project planning professionals in your organization and determine the approach that will work best within your organizational culture.

The purpose of this phase is to ensure that the organization dedicates sufficient time and attention to both developing the project scope and plan and then documenting those activities for future reference.

Organizational Review

One of the first responsibilities of the individuals responsible for business continuity planning is to perform an analysis of the business organization to identify all departments and individuals who have a stake in the BCP process. Here are some areas to consider:

- Operational departments that are responsible for the core services the business provides to its clients
- Critical support services, such as the IT department, facilities and maintenance personnel, and other groups responsible for the upkeep of systems that support the operational departments
- Corporate security teams responsible for physical security, since they are many times the first responders to an incident and are also responsible for the physical safeguarding of the primary facility and alternate processing facility
- Senior executives and other key individuals essential for the ongoing viability of the organization

This identification process is critical for two reasons. First, it provides the groundwork necessary to help identify potential members of the BCP team (see the next section). Second, it builds the foundation for the remainder of the BCP process.

Typically, the individuals spearheading the BCP effort perform the business organization analysis. Some organizations employ a dedicated business continuity manager to lead these efforts, whereas others treat it as a part-time responsibility for another IT leader. Either approach is acceptable because the output of the analysis commonly guides the selection of the remaining BCP team members. However, a thorough review of this analysis

should be one of the first tasks assigned to the full BCP team when it convenes. This step is critical because the individuals performing the initial analysis may have overlooked critical business functions known to BCP team members that represent other parts of the organization. If the team were to continue without revising the organizational analysis, the entire BCP process might be negatively affected, resulting in the development of a plan that does not fully address the emergency-response needs of the organization as a whole.

When developing a business continuity plan, be sure to consider the location of both your headquarters and any branch offices. The plan should account for a disaster that occurs at any location where your organization conducts its business, including your own physical locations and those of your cloud service providers.

BCP Team Selection

In some organizations, the IT and/or security departments bear sole responsibility for business continuity planning, and no other operational or support departments provide input. Those departments may not even know of the plan's existence until a disaster looms on the horizon or actually strikes the organization. This is a critical flaw. The isolated development of a business continuity plan can spell disaster in two ways. First, the plan itself may not take into account knowledge possessed only by the individuals responsible for the day-to-day operation of the business. Second, it keeps operational elements “in the dark” about plan specifics until implementation becomes necessary. These two factors may lead to disengaged units disagreeing with provisions of the plan and failing to implement it properly. They also deny organizations the benefits achieved by a structured training and testing program for the plan.

To prevent these situations from adversely impacting the BCP process, the individuals responsible for the effort should take special care when selecting the BCP team. The team should include, at a minimum, the following individuals:

- Representatives from each of the organization's departments responsible for the core services performed by the business
- Business unit team members from the functional areas identified by the organizational analysis
- IT subject-matter experts with technical expertise in areas covered by the BCP
- Cybersecurity team members with knowledge of the BCP process
- Physical security and facility management teams responsible for the physical plant
- Attorneys familiar with corporate legal, regulatory, and contractual responsibilities
- Human resources team members who can address staffing issues and the impact on individual employees
- Public relations team members who need to conduct similar planning for how they will communicate with stakeholders and the public in the event of a disruption
- Senior management representatives with the ability to set the vision, define priorities, and allocate resources

Tips for Selecting an Effective BCP Team

Select your team carefully. You need to strike a balance between representing different points of view and creating a team with explosive personality differences. Your goal should be to create a group that is as diverse as possible and still operates in harmony.

Take some time to think about the BCP team membership and who would be appropriate for your organization's technical, financial, and political environment. Who would you include?

Each team member brings a unique perspective to the BCP process and will have individual biases. For example, representatives from operational departments will often consider their department the most critical to the organization's continued viability. Although these biases may at first seem divisive, the leader of the BCP effort should embrace them and harness them productively. If used effectively, the biases will help achieve a healthy balance in the final plan as each representative advocates the needs of their department. On the other hand, without effective leadership, these biases may devolve into destructive turf battles that derail the BCP effort and harm the organization as a whole.

Senior Management and BCP

The role of senior management in the BCP process varies widely from organization to organization. It depends on the culture of the business, management interest in the plan, and the regulatory environment. Critical roles played by senior management usually include setting priorities, providing staff and financial resources, and arbitrating disputes about the criticality (i.e., relative importance) of services.

One of the authors recently completed a BCP consulting engagement with a large nonprofit institution. At the beginning of the engagement, he had a chance to sit down with one of the organization's senior executives to discuss his goals and objectives for their work together. During that meeting, the senior executive asked the consultant, “Is there anything you need from me to complete this engagement?”

The senior executive must have expected a perfunctory response because his eyes widened when the consultant said, “Well, as a matter of fact…” The executive then learned that his active participation in the process was critical to its success.

When working on a business continuity plan, the BCP team leader must seek and obtain as active a role as possible from a senior executive. Visible senior-level support conveys the importance of the BCP process to the entire organization. It also fosters the active participation of individuals who might write BCP off as a waste of time that they might otherwise spend on operational activities. Furthermore, laws and regulations might require the active participation of those senior leaders in the planning process. If you work for a publicly traded company, you may want to remind executives that courts may find the officers and directors of the firm personally liable if a disaster cripples the business after they failed to exercise due diligence in their contingency planning.

You may also have to convince management that BCP and DRP spending are not discretionary expenses. Management's fiduciary responsibilities to the organization's shareholders require them to at least ensure that adequate BCP measures are in place.

In the case of this BCP engagement, the executive acknowledged the importance of his support and agreed to participate. He sent an email to all employees introducing the effort and stating that it had his full backing. He also attended several of the high-level planning sessions and mentioned the effort in an organization-wide “town hall” meeting.

Resource Requirements

After the team validates the organizational review, it should turn to an assessment of the resources required by the BCP effort. This assessment involves the resources needed by three distinct BCP phases:

BCP Development The BCP team will require some resources to perform the four elements of the BCP process (project scope and planning, business impact analysis, continuity planning, and plan approval and implementation). It's more than likely that the major resource consumed by this BCP phase will be effort and time expended by members of the BCP team and the support staff they call on to assist in the development of the plan.

BCP Testing, Training, and Maintenance The testing, training, and maintenance components of this phase of the BCP will require some hardware and software commitments. Still, once again, the major commitment in this phase will be the effort of the employees involved in those activities.

BCP Implementation When a disaster strikes and the BCP team deems it necessary to conduct a full-scale implementation of the business continuity plan, the implementation will require significant resources. Those resources include a large amount of effort (BCP will likely

become the focus of a large part, if not all, of the organization) as well as direct financial expenses. For this reason, the team must use its BCP implementation powers judiciously yet decisively.

An effective business continuity plan requires the expenditure of significant resources, ranging from the purchase and deployment of redundant computing facilities to the pencils and paper used by team members scratching out the first drafts of the plan. However, as you saw earlier, personnel are one of the most significant resources consumed by the BCP process. Many security professionals overlook the importance of accounting for labor, but you can rest assured that senior management will not. Business leaders are keenly aware of the effect that time-consuming side activities have on the operational productivity of their organizations and the real cost of personnel in terms of salary, benefits, and lost opportunities. These concerns become especially paramount when you are requesting the time of senior executives.

You should expect that leaders responsible for resource utilization management will put your BCP proposal under a microscope, and you should prepare to defend the necessity of your plan with coherent, logical arguments that address the business case for BCP.

Real World Scenario

Explaining the Benefits of BCP

At a recent conference, one of the authors discussed business continuity planning with the chief information security officer (CISO) of a health system from a medium-sized U.S. city. The CISO's attitude was shocking. His organization had not conducted a formal BCP process, and he was confident that an informal approach would work fine in the unlikely event of a disaster.

This attitude is one of the most common arguments against committing resources to BCP. In many organizations, the attitude that the business has always survived, and the key leaders will figure something out in the event of a disaster, pervades corporate thinking. If you encounter this objection, you might want to point out to management the costs that will be incurred by the business (both direct costs and the indirect cost of lost opportunities) for each day that the business is down. Then, ask them to consider how long a disorganized recovery might take when compared to an orderly, planned continuity of operations (COOP).

Conducting a formal BCP effort is particularly important in healthcare organizations, where the unavailability of systems could have life-or-death consequences. In October 2020, the U.S. Cybersecurity and Infrastructure Security Agency (CISA) issued an alert notifying healthcare organizations of an outbreak of ransomware activity specifically targeting their work. Strong continuity plans play an essential role in defending against these availability attacks.

External Dependencies

When crafting a robust BCP, you need to understand and mitigate the risks associated with external dependencies. These dependencies range from technology vendors supplying critical hardware, software, and cloud services, to legal and regulatory frameworks that shape your operational landscape. Each external factor carries potential risks that could, if unaddressed, disrupt your business operations. Consequently, a comprehensive BCP doesn't just look inward at the organization's processes, but also outward, ensuring that external parties' roles and responsibilities are clearly understood and that contingency plans are in place to tackle any disruptions in these areas.

Vendors

As you develop your BCP, it's crucial to consider the role of all technology vendors, not just those offering cloud services. These vendors, encompassing cloud service providers, hardware suppliers, and software developers, are integral to your organization's operational resilience. Their own business continuity arrangements can significantly impact your organization's ability to maintain business operations during disruptive incidents.

Consider, for example, a firm that outsources email and calendaring to a third-party software-as-a-service (SaaS) provider. Does the contract with that provider include details about the provider's service-level agreement (SLA) and commitments for restoring operations in the event of a disaster?

Also, remember that a contract is not normally sufficient due diligence when choosing a vendor. You should also verify that the vendor has the controls in place to deliver on their contractual commitments. Although it may not be possible for you to physically visit the vendor's facilities to verify their control implementation, you can always do the next best thing—send someone else!

Now, before you go off identifying an emissary and booking flights, realize that many of your vendor's customers are probably

asking the same question. For this reason, the vendor may have already hired an independent auditing firm to conduct an assessment of its controls. They can make the results of this assessment available to you in the form of a System and Organization Controls (SOC) report. We cover SOC reports in more detail in Chapter 15, "Security Assessment and Testing."

Keep in mind that there are three different versions of the SOC report. The simplest of these, a SOC 1 report, covers only internal controls over financial reporting. If you want to verify the security, processing integrity, confidentiality, privacy, or availability controls, you'll want to review either a SOC 2 or a SOC 3 report. The American Institute of Certified Public Accountants (AICPA) sets and maintains the standards surrounding these reports to maintain consistency between auditors from different accounting firms.

For more information on this topic, see the AICPA's document comparing the SOC report types at www.aicpa-cima.com/resources/landing/system-and-organization-controls-soc-suite-of-services.

Legal and Regulatory Requirements

Many industries may find themselves bound by sector-specific, federal, state, and local laws or regulations that require them to implement various degrees of BCP. We've already discussed one example in this chapter—the officers and directors of publicly traded firms have a fiduciary responsibility to exercise due diligence in the execution of their business continuity duties. In other circumstances, the requirements (and consequences of failure) might be even more severe. Emergency services, such as police, fire, and emergency medical operations, have a responsibility to the community to continue operations in the event of a disaster. Indeed, their services become even more critical in an emergency that threatens public safety. Failure to implement an effective BCP could result in the loss of life or property and decreased public confidence in the government.

In many countries, financial institutions, such as banks, brokerages, and the firms that process their data, are subject to

strict government and international banking and securities regulations. These regulations are necessarily strict because their purpose is to ensure the continued operation of the institution as a crucial part of the economy. When pharmaceutical manufacturers must produce products in less-than-optimal circumstances following a disaster or in response to a rapidly emerging pandemic, they are required to certify the purity of their products to government regulators. There are countless other examples of industries that are necessary to continue operating in the event of an emergency by various laws and regulations.

Even if you're not bound by any of these considerations, you might have contractual obligations to your clients that require you to implement sound BCP practices. If your contracts include commitments to customers expressed as *service-level agreements* (SLAs), you might find yourself in breach of those contracts if a disaster interrupts your ability to service your clients. Many clients may feel sorry for you and want to continue using your products/services, but their own business requirements might force them to sever the relationship and find new suppliers.

On the flip side of the coin, developing a strong, documented business continuity plan can help your organization win new clients and additional business from existing clients. If you can show your customers the sound procedures you have in place to continue serving them in the event of a disaster, they'll place greater confidence in your firm and might be more likely to choose you as their preferred vendor. That's not a bad position to be in!

All of these concerns point to one conclusion—it's essential to include your organization's legal counsel in the BCP process. They are intimately familiar with the legal, regulatory, and contractual obligations that apply to your organization. They can help your team implement a plan that meets those requirements while ensuring the continued viability of the organization to the benefit of all—employees, shareholders, suppliers, and customers alike.

Laws regarding computing systems, business practices, and disaster management change frequently. They also vary from jurisdiction to jurisdiction. Be sure to keep your attorneys involved throughout the lifetime of your BCP, including the testing and maintenance phases. If you restrict their involvement to a pre-implementation review of the plan, you may not become aware of the impacts that changing laws and regulations have on your corporate responsibilities.

Business Impact Analysis

Once your BCP team completes the four stages of preparing to create a business continuity plan (organizational review, BCP team selection, resource requirements, external dependencies), it's time to dive into the heart of the work—the *business impact analysis* (BIA). We approach the BIA in several stages:

1. Identifying priorities
2. Risk identification
3. Likelihood assessment
4. Impact analysis
5. Resource prioritization

The BIA identifies the business processes and tasks that are critical to an organization's ongoing viability and the threats posed to those resources. It also assesses the likelihood that each threat will occur and the impact those occurrences will have on the business. The results of the BIA provide you with quantitative and qualitative measures that can help you prioritize the commitment of business continuity resources to the various local, regional, and global risk exposures facing your organization.

It's important to realize that there are two different types of analyses that business planners use when facing a decision:

Quantitative Impact Assessment Involves the use of numbers and formulas to reach a decision. This type of data often expresses options in terms of the dollar value to the business.

Qualitative Impact Assessment Takes non-numerical factors, such as reputation, investor/customer confidence, workforce stability, and other concerns, into account. This type of data often results in categories of prioritization (such as high, medium, and low).

Quantitative assessment and qualitative assessment both play an essential role in the BCP process. However, most people tend to favor one type of analysis over the other. When selecting the individual members of the BCP team, try to achieve a balance between people who prefer each strategy. This approach helps develop a well-rounded BCP and will benefit the organization in the long run.

The BIA process described in this chapter approaches the problem from both quantitative and qualitative points of view. However, it's tempting for a BCP team to "go with the numbers" and perform a quantitative assessment while neglecting the somewhat more subjective qualitative assessment. The BCP team should perform a qualitative analysis of the factors affecting your BCP process. For example, if your business is highly dependent on a few important clients, your management team is probably willing to suffer a significant short-term financial loss to retain those clients in the long term. The BCP team must sit down and discuss (preferably with the involvement of senior management) qualitative concerns to develop a comprehensive approach that satisfies all stakeholders.

As you work your way through the BIA process, you will find that it is quite similar to the risk assessment process covered in Chapter 2, “Personnel Security and Risk Management Concepts.” The techniques used are very similar because both use standard risk evaluation techniques. The major difference is that the risk assessment process is focused on individual assets, whereas the BCP focuses on business processes and tasks.

Identifying Priorities

The first BIA task facing the BCP team is identifying business priorities. Depending on your line of business, certain activities are essential to your day-to-day operations when disaster strikes. You should create a comprehensive list of critical business functions and rank them in order of importance. Although this task may seem somewhat daunting, it's not as hard as it sounds.

These critical business functions will vary from organization to organization, based on each organization's mission. They are the activities that, if disrupted, would jeopardize the organization's ability to achieve its goals. For example, an online retailer would treat the ability to sell products from their website and fulfill those orders promptly as critical business functions.

A great way to divide the workload of this process among the team members is to assign each participant responsibility for drawing up a prioritized list that covers the business functions for which their department is responsible. When the entire BCP team convenes, team members can use those prioritized lists to create a master prioritized list for the organization as a whole. One caution with this approach—if your team is not truly representative of the organization, you may miss critical priorities. Be sure to gather input from all parts of the organization, especially from any areas not represented on the BCP team.

This process helps identify business priorities from a qualitative point of view. Recall that we're describing an attempt to develop both qualitative and quantitative BIAs simultaneously. To begin the quantitative assessment, the BCP team should sit down and draw up a list of organization assets and then assign an *asset value (AV)* in monetary terms to each asset. These values form the basis of risk calculations performed later in the BIA.

The second quantitative measure that the team must develop is the *maximum tolerable downtime (MTD)*, sometimes also known as *maximum tolerable outage (MTO)*. The MTD is the maximum length of time a business function can tolerate a disruption before suffering irreparable harm. The MTD provides valuable information when you're performing both BCP and disaster recovery planning (DRP) planning efforts. The organization's list of critical business functions plays a crucial role in this process. The MTD for critical business functions should be lower than the MTD for activities not identified as critical. Returning to the example of an online retailer, the MTD for the website selling products may be only a few minutes, whereas the MTD for their internal email system might be measured in hours.

The *recovery time objective (RTO)* for each business function is the amount of time in which you think you can feasibly recover the function in the event of a disruption. This value is closely related to the MTD. Once you have defined your recovery objectives, you can design and plan the procedures necessary to accomplish the recovery tasks.

As you conduct your BCP work, ensure that your RTOs are less than your MTDs, resulting in a situation in which a function should never be unavailable beyond the maximum tolerable downtime.

While the RTO and MTD measure the time to recover operations and the impact of that recovery time on operations, organizations must also pay attention to the potential data loss that might occur during an availability incident. Depending on the way that information is collected, stored, and processed, some data loss may take place.

The *recovery point objective (RPO)* is the data loss equivalent to the time-focused RTO. The RPO defines the point in time before the incident where the organization should be able to recover data from a critical business process. For example, an organization might perform database transaction log backups every 15 minutes. In that case, the RPO would be 15 minutes, meaning that the organization may lose up to 15 minutes' worth of data after an incident. If an incident takes place at 8:30 a.m., the last transaction log backup must have occurred sometime between 8:15 a.m. and 8:30 a.m. Depending on the precise timing of the incident and the backup, the organization may have irretrievably lost between 0 and 15 minutes of data.

Risk Identification

The next phase of the BIA is the identification of risks posed to your organization. Recall from Chapter 1, “Security Governance Through Principles and Policies,” that a risk occurs when an asset has a vulnerability and a threat exists that might exploit that vulnerability. During this phase, you'll have an easy time identifying some common threats, but you might need to exercise some creativity to come up with more obscure (but very real) threats to assets.

Hazards come in two forms: natural and person-made.

The following list includes some events that pose natural threats:

- Violent storms/hurricanes/tornadoes/blizzards
- Lightning strikes
- Natural wildfire
- Earthquakes
- Mudslides/avalanches
- Volcanic eruptions
- Pandemics

Person-made threats may include the following events:

- Terrorist acts/wars/civil unrest
- Workplace violence
- Theft/vandalism
- Fires/arson/explosions
- Prolonged power outages
- Building collapses
- Transportation failures
- Internet disruptions
- Service provider outages
- Economic crises

Remember, these are by no means all-inclusive lists. They merely identify some common threats that many organizations face. You may want to use them as a starting point, but a full listing of risks facing your organization will require input from all members of the BCP team.

The risk identification portion of the process is purely qualitative. At this point in the process, the BCP team should not be concerned about the likelihood that each type of risk will materialize or the amount of damage such an occurrence would inflict upon the continued operation of the business. The results of this analysis will drive both the qualitative and quantitative portions of the remaining BIA tasks.

Likelihood Assessment

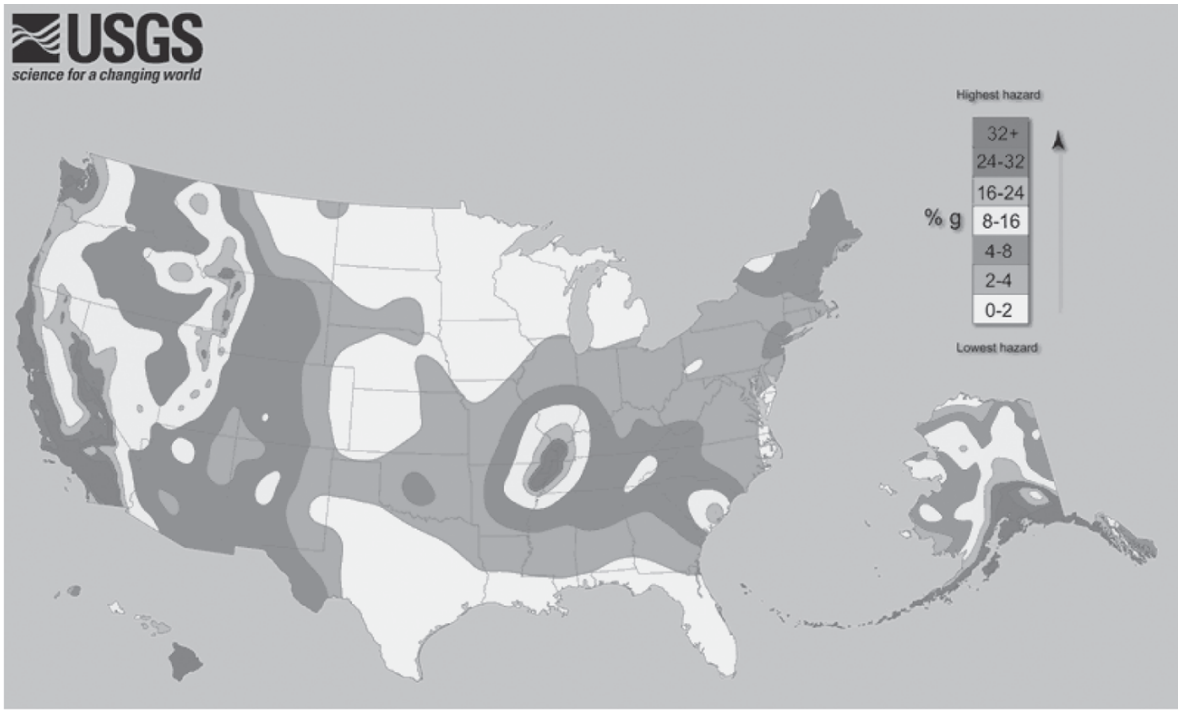
The preceding step consisted of the BCP team's drawing up a comprehensive list of the events that may pose a risk to an organization. You probably recognized that some events are much more likely to happen than others. For example, an earthquake is a much more plausible risk than a tropical storm for a business located in Southern California. A company based in Florida might have the exact opposite likelihood that each threat would occur.

To account for these differences, the next phase of the business impact analysis identifies the likelihood that each threat will occur. We describe this likelihood using the same process used for the risk assessment in Chapter 2. First, we determine the *annualized rate of occurrence (ARO)* that reflects the number of times a business expects to experience a given disaster each year. This annualization process simplifies comparing the magnitude of very different risks.

The BCP team should sit down and determine an ARO for each threat identified in the previous section. Base these numbers on corporate history, professional experience of team members, and advice from experts, such as meteorologists, seismologists, fire prevention professionals, and other consultants, as needed.

In addition to the government resources identified in this chapter, insurance companies develop large repositories of risk information as part of their actuarial processes. You may be able to obtain this information from them to assist in your BCP efforts. After all, you have a mutual interest in preventing damage to your business!

In many cases, you may be able to find likelihood assessments for some hazards prepared by experts at no cost to you. For example, the U.S. Geological Survey (USGS) developed the earthquake hazard map shown in Figure 3.1. This map illustrates the ARO for earthquakes in various regions of the United States. Similarly, the Federal Emergency Management Agency (FEMA) coordinates the development of detailed flood maps of local communities throughout the United States. These resources are available online and offer a wealth of information to organizations performing a business impact analysis.



Source: U.S. Geological survey/www.usgs.gov/programs/earthquake-hazards/hazards

FIGURE 3.1 Earthquake hazard map of the United States

One useful online tool is the nonprofit First Street Foundation's Flood Factor, which helps you quickly identify a property's risk of flooding. See www.floodfactor.com.

Impact Analysis

As you may have surmised based on its name, the impact analysis phase is one of the most critical portions of the business impact analysis. In this phase, you analyze the data gathered during earlier phases to determine the impact that each identified risk would have on the business if it were to occur.

From a quantitative point of view, we will cover three specific metrics: the exposure factor, the single loss expectancy, and the annualized loss expectancy. Each one of these values describes a particular risk/asset combination evaluated during the previous phases.

The *exposure factor* (EF) is the amount of damage that the risk poses to the asset, expressed as a percentage of the asset's value. For example, if the BCP team consults with fire experts and determines that a building fire would destroy 70 percent of the building, the exposure factor of the building to fire is 70 percent.

The *single loss expectancy (SLE)* is the monetary loss expected each time the risk materializes. You can compute the SLE using the following formula:

$$\text{SLE} = \text{Asset Value}\,(\text{AV}) \times \text{Exposure Factor}\,(\text{EF})$$

Continuing with the preceding example, if the building is worth $500,000, the single loss expectancy would be 70 percent of $500,000, or $350,000. You can interpret this figure to mean that you could expect a single fire in the building would cause $350,000 worth of damage.

The *annualized loss expectancy (ALE)* is the monetary loss that the business expects to suffer as a result of the risk harming the asset during a typical year. The SLE is the amount of damage you expect each time a disaster strikes, and the ARO (from the likelihood analysis) is the number of times you expect a disaster to occur each year. You compute the ALE by simply multiplying those two numbers:

$$\text{ALE} = \text{SLE} \times \text{ARO}$$

Returning once again to our building example, fire experts might predict that a fire will occur in the building approximately once every 30 years, specifically determining that there is a 0.03 chance of a fire in any given year. The ALE is then 3 percent of the $350,000 SLE, or $10,500. You can interpret this figure to mean that the business should expect to lose $10,500 each year due to a fire in the building.

Obviously, a fire will not occur each year—this figure represents the average cost over the approximately 30 years between fires. It's not especially useful for budgeting considerations but proves invaluable when attempting to prioritize the assignment of BCP resources to a given risk. Of course, a business leader may decide

that the risk of fire remains unacceptable and take actions that contradict the quantitative assessment. That's where qualitative assessment comes into play.

Be sure you're familiar with the quantitative formulas contained in this chapter, and the concepts of asset value, exposure factor, the annualized rate of occurrence, single loss expectancy, and annualized loss expectancy. Know the formulas and be able to work through a scenario.

From a qualitative point of view, you must consider the nonmonetary impact that interruptions might have on your business. For example, you might want to consider the following:

- Loss of goodwill among your client base
- Loss of employees to other jobs after prolonged downtime
- Social/ethical responsibilities to the community
- Negative publicity

It's difficult to put dollar values on items like these to include them in the quantitative portion of the impact analysis, but they are equally important. After all, if you decimate your client base, you won't have a business to return to when you're ready to resume operations.

Resource Prioritization

The final step of the BIA is to prioritize the allocation of business continuity resources to the various risks that you identified and assessed in earlier phases of the BIA.

From a quantitative point of view, this process is relatively straightforward. You simply create a list of all the risks you analyzed during the BIA process and sort them in descending order according to the ALE computed during the impact analysis phase. This step provides you with a prioritized list of the risks

that you should address. Select as many items as you're willing and able to handle simultaneously from the top of the list and work your way down. Eventually, you'll reach a point at which you've exhausted either the list of risks (unlikely) or all your available resources (much more likely).

Recall from the previous section that we also stressed the importance of addressing qualitatively important concerns. In earlier sections about the BIA, we treated quantitative and qualitative analyses as mainly separate functions with some overlap. Now it's time to merge the two prioritized lists, which is more of an art than a science. You must sit down with the BCP team and representatives from the senior management team and combine the two lists into a single prioritized list.

Qualitative concerns may justify elevating or lowering the priority of risks that already exist on the ALE-sorted quantitative list. For example, if you run a fire suppression company, your number-one priority might be the prevention of a fire in your principal place of business even though an earthquake might cause more physical damage. The potential loss of reputation within the business community resulting from the destruction of a fire suppression company by fire might be too challenging to overcome and result in the eventual collapse of the business, justifying the increased priority.

Continuity Planning

The first two phases of the BCP process (project scope and planning and business impact analysis) focus on determining how the BCP process will work and prioritizing the business assets that you must protect against interruption. The next phase of the BCP development, continuity planning, focuses on developing and implementing a continuity strategy to minimize the impact realized risks might have on protected assets.

Two primary subtasks are involved in continuity planning:

- Strategy development
- Provisions and processes

In this section, you'll learn about both strategy development and the provisions and processes that are essential in continuity planning. The goal of this process is to create a *continuity of operations plan (COOP)*. The continuity of operations plan focuses on how an organization will carry out critical business functions beginning shortly after a disruption occurs and extending for up to one month of sustained operations.

Strategy Development

Strategy development bridges the gap between the business impact analysis and the continuity planning elements of BCP development. The BCP team must now take the prioritized list of concerns raised by the quantitative and qualitative resource prioritization exercises and determine which risks will be addressed by the business continuity plan. Fully addressing all the contingencies would require the implementation of provisions and processes that maintain a zero-downtime posture in the face of every possible risk. For obvious reasons, implementing a policy this comprehensive is impossible.

The BCP team should look back to the MTD estimates created during the early stages of the BIA and determine which risks are deemed acceptable and which must be mitigated by BCP continuity provisions. Some of these decisions are obvious—the risk of a blizzard striking an operations facility in Egypt is negligible and constitutes an acceptable risk. The risk of a monsoon in New Delhi is severe enough that BCP provisions must mitigate it. Each of these risk assessments includes cost considerations. It's normally only appropriate to mitigate a risk if the cost of mitigation is less than the expected cost of the risk itself.

Once the BCP team determines which risks require mitigation and the level of resources that will be committed to each mitigation task, they are ready to move on to provisions and processes.

Provisions and Processes

The provisions and processes subtask of continuity planning is the meat of the entire business continuity plan. In this subtask, the BCP team designs the specific procedures and mechanisms that will mitigate the risks deemed unacceptable during the strategy development subtask. Three categories of assets must be protected through BCP provisions and processes: people, buildings/facilities, and infrastructure. In the next three sections, we'll explore some of the techniques you can use to safeguard these categories.

People

First, you must ensure that the people within your organization are safe before, during, and after an emergency. Once you've achieved that goal, you must make provisions to allow your employees to conduct both their BCP and operational tasks in as normal a manner as possible, given the circumstances.

Don't lose sight of the fact that people are your most valuable asset. The safety of people must always come before the organization's business goals. Make sure that your business continuity plan makes adequate provisions for the security of your employees, customers, suppliers, and any other individuals who may be affected.

Management should provide team members with all the resources they need to complete their assigned tasks. At the same time, if circumstances dictate that people be present in the workplace for extended periods, arrangements must be made for shelter and food. Any continuity plan that requires these provisions should include detailed instructions for the BCP team in the event of a disaster. The organization should maintain stockpiles of provisions sufficient to feed the operational and support groups for an extended time in an accessible location.

Plans should specify the periodic rotation of those stockpiles to prevent spoilage.

Buildings and Facilities

Many businesses require specialized facilities to carry out their critical operations. These might include standard office facilities, manufacturing plants, operations centers, warehouses, distribution/logistics centers, and repair/maintenance depots, among others. When you perform your BIA, you will identify those facilities that play a critical role in your organization's continued viability. Your continuity plan should address two areas for each critical facility:

Hardening Provisions Your BCP should outline mechanisms and procedures that can be put in place to protect your existing facilities against the risks defined in the strategy development phase. Hardening provisions might include steps as simple as patching a leaky roof or as complex as installing reinforced hurricane shutters and fireproof walls.

Alternate Sites If it's not feasible to harden a facility against a risk, your BCP should identify alternate site(s) where business activities can resume immediately (or at least in a time that's shorter than the maximum tolerable downtime for all affected critical business functions). Chapter 18 describes a few of the facility types that might be useful in this stage. Typically, an alternate site is associated with disaster recovery planning (DRP) rather than BCP. The organization might identify the need for an alternate site during BCP development, but it takes an actual interruption to trigger the use of the site, making it fall under the DRP.

Infrastructure

Every business depends on some sort of infrastructure for its critical processes. For many companies, a vital part of this infrastructure is an IT backbone of communications and computer systems that process orders, manage the supply chain,

handle customer interaction, and perform other business functions. This backbone consists of servers, workstations, and critical communications links between sites. The BCP must address how the organization will protect these systems against risks identified during the strategy development phase. As with buildings and facilities, there are two main methods of providing this protection:

Physically Hardening Systems You can protect systems against the risks by introducing protective measures such as electronic-friendly fire suppression systems and uninterruptible power supplies.

Alternative Systems You can also protect business functions by introducing redundancy (either redundant components or completely redundant systems/communications links that rely on different facilities).

These same principles apply to whatever infrastructure components serve your critical business processes—transportation systems, electrical power grids, banking and financial systems, water supplies, and so on.

As organizations move many of their technology operations to the cloud, this doesn't reduce their reliance on physical infrastructure. Although the company may no longer operate the infrastructure themselves, they still rely on the physical infrastructure of their cloud service providers and should take measures to ensure they are comfortable with the level of continuity planning conducted by those providers. A disruption at a key cloud provider that affects one of the organization's own critical business functions can be just as damaging as a failure of the organization's own infrastructure.

Plan Approval and Implementation

Once the BCP team completes the design phase of the BCP document, it's time to gain top-level management endorsement of the plan. If you have had senior management involvement

throughout the development phases of the plan, this should be a relatively straightforward process. On the other hand, if this is your first time approaching management with the BCP document, you should be prepared to provide a lengthy explanation of the plan's purpose and specific provisions.

Senior management buy-in is essential to the success of the overall BCP effort.

Plan Approval

If possible, you should attempt to have the plan endorsed by the top executive in your business—the chief executive officer, chairperson, president, or similar business leader. This move demonstrates the importance of the plan to the entire organization and showcases the business leader's commitment to business continuity. The signature of such an individual on the plan also gives it much greater weight and credibility in the eyes of other senior managers, who might otherwise brush it off as a necessary but trivial IT initiative.

Plan Implementation

Once you've received approval from senior management, it's time to dive in and start implementing your plan. The BCP team should get together and develop an implementation schedule that utilizes the resources dedicated to the program to achieve the stated process and provision goals in as prompt a manner as possible, given the scope of the modifications and the organization's attitude toward continuity planning.

After fully deploying resources, the BCP team should supervise the design and implementation of a BCP maintenance program. This program ensures that the plan remains responsive to evolving business needs.

Communication, Training and Education

Communication, training and education are essential elements of the BCP implementation. All personnel who will be involved in the plan (either directly or indirectly) should receive some sort of training on the overall plan, as well as their individual responsibilities. These responsibilities should be clearly communicated to everyone involved.

Everyone in the organization should receive at least a plan overview briefing. These briefings provide employees with the confidence that business leaders have considered the possible risks posed to the continued operation of the business and have put a plan in place to mitigate the impact on the organization should a disruption occur.

People with direct BCP responsibilities should be trained and evaluated on their specific BCP tasks to ensure that they can complete them efficiently when disaster strikes. Furthermore, at least one backup person should be trained for every BCP task to provide redundancy in the event personnel are injured or cannot reach the workplace during an emergency.

BCP Documentation

Documentation is a critical step in the business continuity planning process. Committing your BCP methodology to paper provides several significant benefits:

- It ensures that BCP personnel have a written continuity document to reference in the event of an emergency, even if senior BCP team members are not present to guide the effort.
- It provides a historical record of the BCP process that will be useful to future personnel seeking to both understand the reasoning behind various procedures and implement necessary changes in the plan.
- It forces the team members to commit their thoughts to paper—a process that often facilitates the identification of

flaws in the plan. Having the plan on paper also allows draft documents to be distributed to individuals not on the BCP team for a “sanity check.”

In the following sections, we'll explore some of the essential components of the written business continuity plan.

Continuity Planning Goals

First, the plan should describe the goals of continuity planning as set forth by the BCP team and senior management. These goals should be decided on at or before the first BCP team meeting and will most likely remain unchanged throughout the life of the BCP.

The most common goal of the BCP is quite simple: to ensure the continuous operation of the business in the face of an emergency. Other goals may also be inserted in this section of the document to meet organizational needs. For example, you might have an objective that your customer call center experiences no more than 15 consecutive minutes of downtime or that your backup servers be able to handle 75 percent of your processing load within one hour of activation.

Statement of Importance

The statement of importance reflects the criticality of the BCP to the organization's continued viability. This document commonly takes the form of a letter to the organization's employees, stating the reason that the organization devoted significant resources to the BCP development process and requesting the cooperation of all personnel in the BCP implementation phase.

Here's where the importance of senior executive buy-in comes into play. If you can put out this letter under the signature of the chief executive officer (CEO) or an officer at a similar level, the plan will carry tremendous weight as you attempt to implement changes throughout the organization. If you have the signature of a lower-level manager, you may encounter resistance as you try to work with portions of the organization outside of that individual's direct control.

Statement of Priorities

The statement of priorities flows directly from the identifying priorities phase of the business impact analysis. It simply involves listing the functions considered critical to continued business operations in a prioritized order. When listing these priorities, you should also include a statement that they were developed as part of the BCP process and reflect the importance of the functions to continued business operations in the event of an emergency and nothing more. Otherwise, the list of priorities could be used for unintended purposes and result in a political turf battle between competing organizations to the detriment of the business continuity plan.

Statement of Organizational Responsibility

The statement of organizational responsibility also comes from a senior-level executive and can be incorporated into the same letter as the statement of importance. It echoes the sentiment that “business continuity is everyone's responsibility.” The statement of organizational responsibility restates the organization's commitment to business continuity planning. It informs employees, vendors, and affiliates that the organization expects them to do everything they can to assist with the BCP process.

Statement of Urgency and Timing

The statement of urgency and timing expresses the criticality of implementing the BCP and outlines the implementation timetable decided on by the BCP team and agreed to by upper management. The wording of this statement will depend on the actual urgency assigned to the BCP process by your organization's leadership. Consider including a detailed implementation timeline to foster a sense of urgency.

Risk Assessment

The risk assessment portion of the BCP documentation essentially recaps the decision-making process undertaken during the business impact analysis. It should include a

discussion of all the critical business functions considered during the BIA as well as the quantitative and qualitative analyses performed to assess the risks to those functions. Include the actual AV, EF, ARO, SLE, and ALE figures in the quantitative analysis. Also, describe the thought process behind the analysis to the reader. Finally, keep in mind that the assessment reflects a point-in-time evaluation, and the team must update it regularly to reflect changing conditions.

Risk Acceptance/Mitigation

The risk acceptance/mitigation section of the BCP documentation contains the outcome of the strategy development portion of the BCP process. It should cover each risk identified in the risk analysis portion of the document and outline one of two thought processes:

- For risks that were deemed acceptable, it should outline the reasons the risk was considered acceptable as well as potential future events that might warrant a reconsideration of this determination.
- For risks that were deemed unacceptable, it should outline the risk management provisions and processes put into place to reduce the risk to the organization's continued viability.

It's far too easy to look at a difficult risk mitigation challenge and say, “We accept this risk” before moving on to less difficult things. Business continuity planners should resist these statements and ask business leaders to document their risk acceptance decisions formally. If auditors later scrutinize your business continuity plan, they will most certainly look for formal artifacts of any risk acceptance decisions made in the BCP process.

Vital Records Program

The BCP documentation should also outline a vital records program for the organization. This document states where critical business records will be stored and the procedures for making and storing backup copies of those records.

One of the biggest challenges in implementing a vital records program is often identifying the essential records in the first place. As many organizations transitioned from paper-based to digital workflows, they often lost the rigor that existed around creating and maintaining formal file structures. Vital records may now be distributed among a wide variety of IT systems and cloud services. Some may be stored on central servers accessible to groups, whereas others may be located in digital repositories assigned to an individual employee.

If that messy state of affairs sounds like your current reality, you may want to begin your vital records program by identifying the records that are truly critical to your business. Sit down with functional leaders and ask, “If we needed to rebuild our organization today in a completely new location without access to any of our computers or files, what records would you need?” Asking the question in this way forces the team to visualize the actual process of re-creating operations and, as they walk through the steps in their minds, will produce an inventory of the organization's vital records. This inventory may evolve as people remember other important information sources, so you should consider using multiple conversations to finalize it.

Once you've identified the records that your organization considers vital, the next task is a formidable one: find them. You should be able to identify the storage locations for each document identified in your vital records inventory. Once you've completed this task, you can then use this vital records inventory to inform the rest of your business continuity planning efforts.

Emergency Response Guidelines

The emergency response guidelines outline the organizational and individual responsibilities for immediate response to an

emergency. This document provides the first employees to detect an emergency with the steps they should take to activate provisions of the BCP that do not start automatically. This documentation should include the following:

- Immediate response procedures (security and safety procedures, fire suppression procedures, notification of appropriate emergency-response agencies, etc.)
- A list of the individuals to notify of the incident (executives, BCP team members, etc.)
- Secondary response procedures that first responders should follow while waiting for the BCP team to assemble

Your documentation should be easily accessible to everyone in the organization who may be among the first responders to a crisis incident. Any time a disruption strikes, time is of the essence. Slowdowns in activating your business continuity procedures may result in undesirable downtime for your business operations.

Maintenance

The BCP documentation and the plan itself must be living documents. Every organization encounters nearly constant change, and this dynamic nature ensures that the business's continuity requirements will also evolve. The BCP team should not disband after the plan is developed but should still meet periodically to discuss the plan and review the results of plan tests to ensure that it continues to meet organizational needs.

Minor changes to the plan do not require conducting the full BCP development process from scratch; the BCP team may make them at an informal meeting by unanimous consent. However, keep in mind that drastic changes in an organization's mission or resources may require going back to the BCP drawing board and beginning again.

Any time you make a change to the BCP, you must practice reasonable version control. All older versions of the BCP should be physically destroyed and replaced by the most current version

so that no confusion exists as to the correct implementation of the BCP.

It is also a good practice to include BCP components in job descriptions to ensure that the BCP remains fresh and to increase the likelihood that team members carry out their BCP responsibilities correctly. Including BCP responsibilities in an employee's job description also makes them fair game for the performance review process.

Testing and Exercises

The BCP documentation should also outline a formalized exercise program to ensure that the plan remains current. Exercises also verify that team members receive adequate training to perform their duties in the event of a disaster. The testing process is quite similar to that used for the disaster recovery plan, so we'll reserve the discussion of the specific test types for Chapter 18.

Summary

Every organization dependent on technological resources for its survival should have a comprehensive business continuity plan in place to ensure the sustained viability of the organization when emergencies take place. Several important concepts underlie solid business continuity planning practices, including project scope and planning, business impact analysis, continuity planning, and approval and implementation.

Every organization must have plans and procedures in place to help mitigate the effects a disaster can have on continuing operations and to accelerate the return to normal operations. To determine the risks to your critical business functions that require mitigation, you must work with a cross-functional team to conduct a business impact analysis from both quantitative and qualitative points of view. You must take the appropriate steps in developing a continuity strategy for your organization and know what to do to weather future disasters.

Finally, you must create the documentation required to ensure the effective communication of your plan to current and future

BCP team participants. Such documentation should include the continuity of operations plan (COOP). The business continuity plan must also contain statements of importance, priorities, organizational responsibility, and timing. Also, the documentation should include plans for risk assessment, acceptance, and mitigation; a vital records program; emergency-response guidelines; and procedures for maintenance and testing.

Chapter 18 will take this planning to the next step—developing and implementing a disaster recovery plan that includes the technical controls required to keep your business running in the face of a disaster.

Study Essentials

Understand the four steps of the business continuity planning process. Business continuity planning involves four distinct elements: project scope and planning, business impact analysis, continuity planning, and approval and implementation. Each element contributes to the overall goal of ensuring that business operations continue uninterrupted in the face of an emergency.

Describe how to perform the business organization analysis. In the business organization analysis, the individuals responsible for leading the BCP process determine which departments and individuals have a stake in the business continuity plan. This analysis serves as the foundation for BCP team selection and, after validation by the BCP team, is used to guide the next stages of BCP development.

List the necessary members of the business continuity planning team. The BCP team should contain, at a minimum, representatives from each of the operational and support departments; technical experts from the IT department; physical and IT security personnel with BCP skills; legal representatives familiar with corporate legal, regulatory, and contractual responsibilities; human resources members; public relations members; and representatives from senior management.

Additional team members depend on the structure and nature of the organization.

Know the legal and regulatory requirements that face business continuity planners. Business leaders must exercise due diligence to ensure that shareholders' interests are protected in the event disaster strikes. Some industries are also subject to federal, state, and local regulations that mandate specific BCP procedures. Many businesses also have contractual obligations to their clients that they must meet before, during, and after a disaster.

Explain the stages of the business impact analysis process. The five stages of the business impact analysis process are identifying priorities, risk identification, likelihood assessment, impact analysis, and resource prioritization.

Describe the process used to develop a continuity strategy. During the strategy development subtask, the BCP team determines which risks they will mitigate. In the provisions and processes subtask, the team designs mechanisms and procedures that will mitigate identified risks. The plan must then be approved by senior management and implemented. Personnel must also receive training on their roles in the BCP process.

Explain the importance of comprehensively documenting an organization's business continuity plan. Committing the plan to writing provides the organization with a written record of the procedures to follow when disaster strikes. It prevents the “it's in my head” syndrome and ensures the orderly progress of events in an emergency.

Written Lab

1. Why is it essential to include legal representatives on your business continuity planning team?
2. What is wrong with the “seat-of-the-pants” approach to business continuity planning?