Chapter 7
Implementing a Secure E-Commerce Web Site

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ABSTRACT

The design of a secure e-commerce website involves the process of grouping your systems together in common areas as defined by their requirements for security. These groupings or security zones will be regulated by the control systems (such as firewalls and routers) that you deploy in your site. They will also be monitored against attack by intrusion detection systems (IDSs) and other tools deployed within your environment. The main steps in securing the E-commerce Web Site are: (i) implementing Security Zones, (2) Deploying Firewalls, (3) Deciding Where to Place the Components (4) Implementing Intrusion Detection (5) Managing and Monitoring the Systems.

INTRODUCTION

It is very necessary to understand how to create the infrastructure required to create a successful web application (Russell, R., 2001; Bhasin, S., 2003). In this chapter, we explain how to create the actual infrastructure to build, manage, and maintain your site. Depending on your business idea and the logistics involved, your actual implementation may vary slightly from the designs included here, but the basic concepts remain the same. Whether your site is a basic implementation or a more advanced system with all the bells and whistles, maintaining the security of your clients and your business should be a basic principle. We explore the process of grouping your systems together in common areas as defined by their requirements for security. These groupings or security zones will be regulated by the control systems (such as firewalls and routers) that you deploy in your site. They will also be monitored against attack by intrusion detection systems (IDSs) and other tools deployed within your environment. Constant management and monitoring of any site is essential. There are no plug-and-forget solutions or magic silver bullets. In e-commerce, staying alert and keeping knowledgeable about events happening around you will help to ensure your success. Lastly, this chapter covers some options and considerations for outsourcing your site to a partner at this stage of the project. We will examine how to select the right partner and the right type of outsourcing solution to meet your requirements as well as explore the various types of solutions available to you.

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E-COMMERCE SITE COMPONENTS

An e-commerce site is usually made up of several integral components, including the normal network components such as routers, hubs, and switches. But you may not be as well-acquainted with some other components: firewalls, IDSs, Web servers, load balancers, database servers, and financial processing servers.

- **Firewall:** A firewall is a device used to provide access controls for a network or segment. Think of this system as a network traffic cop, allowing or disallowing traffic into a network based on who the requestor is and the type of connection they are asking for.

- **Intrusion Detection Systems:** An IDS can be network-based or host-based, or both. These tools are very flexible; they can monitor and manage data and make content filtering decisions.

- **Web Servers:** This is the most common server in an e-commerce site. This system’s job is to serve up the Web pages or content that the consumers using your site request.

- **Load Balancers:** These specialized devices are used to regulate the traffic flow to the Web servers, ensuring that the work load is balanced between the multiple systems that perform the work of your site.

- **Database Servers:** These systems are used to store the information your site depends on for business, including catalogs, product descriptions, consumer data, and all the other bits of information that you need to do business. If these servers have consumer information on them, they must be protected even more carefully than systems just serving your site’s data to the Web.

- **Financial Processing Servers:** These servers are used to store and process customer and vendor financial information. They are often the end-line goal of most attackers, so they must be given the most care of any of the systems on your network. Losing the information in these servers could spell the doom of your business, so treat these systems with the utmost of respect. Your site may have additional components, or redundant sets of these types of devices, but these are the basic commonalities across the board.

In this chapter, we use these components to detail the basic understanding of e-commerce site layouts and security measures. As your site grows in functionality and profit margin, you may find yourself adding more and more bells and whistles to the site implementation. You may create redundant sets of these systems or devise new methods of performing your business functions with better speed and accuracy. Remember to keep your security zones clear of one another and not to mix and match functionality and access requirements as your site grows. Use this chapter as a guideline to make sure that your new designs still meet your initial security requirements.

IMPLEMENTING SECURITY ZONES

The easiest way to think of security zones is to imagine them as discrete network segments holding systems that share common requirements, such as the types of information they handle, who uses them, and what levels of security they require to protect their data. They may be the same type of operating system or different operating systems altogether. They may be PCs, or servers, or even a mainframe.
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