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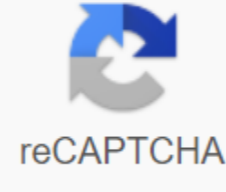**Continue**

Sean-Philippe Oriano, Robert Shimonski, in the client side of attack and defense, 2012Whereas server side attacks seek to compromise and breach data and applications that are present on the server, client-side attacks specifically aimed at the software on the desktop itself. Apps such as web browsers, media players, email customers, office suites, and other similar apps are the main targets for an attacker. It also doesn't cover many of the home-designed applications that are widely used in many organizations around the world. Homegrown or home-built apps add other elements to the mix because apps that fit into this category cannot pass any formal security testing. It also does not take into account that the server system is easier to patch, protect and monitor, then many customers who attach to it, as well as an even more diverse operating system that is used. Multiply this by the number of different applications used, and you'll see that the problem is growing exponentially, making it difficult to solve the problem. The wide and varied range of software presented on the desktop in the organization represents a great target for attackers and a serious problem for a security professional. In fact, for a security professional looking at a customer attack, this is an easy way to miss one of the most dangerous security impact mechanisms in the organization. Figure 1.1 shows an example of a typical customer attack. Figure 1.1. An example of typical AttackServers side customers in the context of this text will refer to an environment that is hosted on a specialized system designed to serve users and respond to different types of requests. The server environment can include and includes server applications, such as those that provide audio and video streaming, serve documents, and perform e-commerce functions to name just a few. Although the servers will be covered in this text at various points they are not the main targets of this text as our intention is to focus on attacks on the client side. The environment on the server side represents a huge level of complexity and other issues that exceed the scope of the book and will therefore only be covered if they involve customer attacks. Eric Conrad, ... Joshua Feldman in the CISSP Study Guide (Third Edition), 2016Server-side attacks (also called service attacks) are launched directly from the attacker (customer) to the listening service. The 2008 Conficker worm was spread using a number of methods, including an attack on a server port 445, using weakness in RPC service. Windows systems that lacked the MS08-067 patch (and were otherwise not protected or tempered) were vulnerable to this attack. More information about Conficker is available by The Attack is shown in Figure 4.15, where evil.example.com evil.example.com attack on bank.example.com by listening on TCP Port 445.Figure 4.15. Server-Side AttackPatching, System Hardening, Firewalls and other forms of deep protection mitigate the server side of attacks. Organizations should not allow direct access to server ports from unreliable networks such as the Internet unless the systems are tempered and placed on the DMH networks that we discuss in Chapter 5, Domain 4: Communication and Network Security. This is not solely a server problem (such as a file server running the Windows 2012 operating system): desktops and laptops running operating systems such as Ubuntu Linux 15.04 and Windows 10 also run services, and may be vulnerable to attacks on the server side. Some prefer the term attack on the side of the service to make this distinction clear, but the exam uses the term server-side. Eric Conrad, ... Joshua Feldman, at the eleventh hour of CISSP® (Third Edition), 2017Client side attacks occur when a user downloads malicious content. The flow of data varies from server to server attack: Customer attacks are initiated by the victim, who downloads content from the attacker. Attacks by customers are difficult to mitigate for organizations that allow Access to the Internet. Customers include word processing software, spreadsheets, media players, web browsers, etc. Most firewalls are much more restrictive incoming compared to outgoing; They were designed to keep the bad guys out, and soften the server side of attacks originating from unreliable networks. They are often unable to prevent attacks from the customer. Sean-Philippe Oriano, Robert Shimonski, in Client-Side Attacks and Defense, 2012 So why are client attacks succeeding and why are they becoming increasingly part of the arsenal of hackers and attacks? The answer is due to a combination of reasons, including, but not limited to, protection, as mentioned earlier in the first chapter, which we will emphasize throughout this book. Modern web applications provide some protection against certain types of attacks by the customer, but there are always new ones that can be used. The examples used in the previous section, XSS, are a type of client and server attack that has been around for a long time, which has evolved and changed over the years, thwarting several attempts to stop them from occurring. Don't forget about the premise to take advantage of any vulnerability on the client, which is that the application has to interact with the server in some way. Referring to XSS, we can easily conclude that the attacks being discussed are not possible, so that the browser does not communicate actively with the server. Once this condition is the next step for the attacker is to set up the attack and try to execute it. Referring to the first chapter on customer attacks, let's look at each of the we have presented and see how they can be exploited.•User ignorance: the lack of user knowledge can quickly lead to them becoming a victim because they cannot recognize the situation they can put themselves in. In most cases, the user will rely on the system to protect them from harm that we have seen may not be able to do so. How many times have you heard a comment from a user that they are safe because they use a Brand X browser, email client, or operating system? This usually happens quite a lot in technology and computing. There's a word for people who have that attitude, victims. The reality is that every piece of software, no matter who does it, is vulnerable to attacks by the customer and ignorance or arrogance about it will not help keep someone safe.•Poor Defense: Browsers can still fall victim to these attacks, even if they have been around for a while. Also note that we used email to send a message containing a link that used XSS, which opens up the possibility that any browser protection can be circumvented altogether. In addition, apps such as instant messaging software may also have links embedded in a message that re-bypasses the protections seen in the browser or other mechanisms. A good example of a vulnerability seen in email clients and related applications that can lead to an effective attack by a customer is a phishing email. These emails are the ones that are sent with some sort of message in it that looks appealing and tempting to the recipient. When a recipient receives a phishing email, they read the message and are encouraged to click on the link for more information or for other reasons. Once the user receives this email and clicks on the link contained in it all bets are off, and the recipient can now actually fall victim to any of the attacks discussed above or the other ones have yet to be discussed, such as those that run through ActiveX or Java. Both of these technologies will be more detailed in later chapters.•Malicious HTTP Queries: Applications that process information from the Internet open the possibility that they may be sent malicious http requests. Think how many apps this makes vulnerable, literally any application that is connected to the Internet can fall victim to someone sending it a vice request. Some forms of attacks in this area include HTTP headline injections and Answer Splitting both of which can lead to XSS attacks.•Lack service: Let's face it, most end users are unable to apply patches and updates in a timely manner, if at all. In the past and still true today, patches have added features and fixed vulnerabilities that are lead to attacks from the customer, but these patches are not good if they are not applied. In addition, there are times when applying a patch fix can create new security problems, holes and security flaws. Once again referring to XSS you can search the web through websites such as www.bugtraq.com and Microsoft's own knowledge base to see a few vulnerabilities that existed and the number that have been fixed. Users outside of corporate environments still don't regularly realize that they need to apply these fixes and updates so they don't make themselves more vulnerable. While we've covered a lot of attacks, types and techniques, there are still many. Keep in mind that there are many more coding languages and scenarios. Flash, Actionscript, PHP, CGI, XML, and the list can be followed. Basically, if not covered here or in this book, any tools that you use or think you can use should be carefully considered and exploits for each type are considered carefully. The modern information age has shifted almost every physical business to an online platform. To do this, one of the most popular ways is to have a web app for your business. The main reason for this popularity is that the Internet is an inexpensive, simple and fastest way to communicate and share information. But this handy way tags along with a number of serious cyber threats. According to Akamai's Internet Status Report for the fourth quarter of 2017, the total number of attacks on web applications in the fourth quarter of 2016 is an increase of 10 percent compared to the fourth quarter of 2016. Even Verizon DBIR data supports Akamai's assertion in a 2016 and 2017 report that said web application attacks were the most common model behind actual security breaches. Over the past few years, it has been observed that web attack applications are potential or noisy with an attack on the breach ratio, 100K to 1. This is because malicious hackers have now moved to automation to find weaknesses in web applications. What is a web app? A web application is a computer program with a client server that uses web browsers and web technologies that allow its visitors to store and receive data in/from the database over the Internet. You must have seen websites that allow you to store data such as personal data, credit/debit card numbers, etc., in a database owned by the website for immediate and permanent use; this is possible with web applications. It uses server-side scripts: PHP and ASP to process data stored in the database through an interface or client-side scenarios such as HTML and JavaScript. Webmail, login forms, content management systems, shopping carts are great examples of web applications. To understand the attacks of web applications, it would be better to take a closer look at its main workflow. Web applications can be dynamic and static in nature, which decides whether a web application is required by a web application processing or not. Typically, a web application requires a web server to handle customer requests, an application server to handle user-run tasks, and a database to store user data. Web app stream looks like this: The most common web attack applications and the security report for web application solutions in production 2 2018 lists five common web application attacks that are one. Cross-site scenarios (XSS) Cross-site scenarios is one of the most frequent attacks. According to Akamai's Internet Status Report for the fourth quarter of 2017, the total number of attacks on web applications in the fourth quarter of 2016. The code changes to access the user's personal data when the victim clicks on the URL. This XSS attack can also change the website app's web page to redirect its authorized users to fraudulent sites. There are three essential ways to avoid XSS vulnerabilities: the data you get from the web application is protected before making it available to the end user. This is called data flight or input escape. This methodology prevents the data from being interpreted in any malicious way. The web application is designed in such a way that it censors the data received and does not allow you to visualize the characters (mainly, zlt; and ogt;). If your web page doesn't allow users to add their own code to your page, it's easy to avoid JavaScript and HTML scripts. But if your web app contains comment boxes or the forum itself, then you are left with very few options. In this case, you can carefully choose which HTML entities you want to include in your web application. The input check ensures that your web application provides reliable data and does not allow inaccurate or malicious data to damage your database, web application, or end-user personal data. The white list is commonly associated with the S'L injection, but allows good characters can prevent XSS attacks too. You must have seen reliable websites without allowing you to enter special characters in text fields; this is one of the reasons for checking the input to prevent the web application from attacking XSS. Data disinfection is a modification of input to make sure it is valid. You can do this by attaching the data to double quotes. This method is useful for web applications using HTML markups. Changing invalid data to a valid form confirms that the data you receive will not harm your web application or database. All three methods will not be enough if offline. But when implemented as a whole, they can fully provide a defensive force to combat XSS attacks. 2. Injection S'L (S'L) Under this web application attack, hackers enter malicious malware commands in the entry fields that will run in the backend database. This is especially true in data-driven applications. S'L injections can easily slip into a web application if there are any loopholes in the execution of the software. With these kinds of web application attacks, attackers can modify or delete existing data and create fake identities, such as becoming an impostor of a database administrator. The main solution to this web application attack is that all input fields (such as text fields, comment margins, etc.) of web applications must be double-checked. In addition, you can integrate a web application firewall into security to filter unvere tested SDL statements from genuine network traffic. 3. Automated Threats Automated Threat is a threat to computer security in the form of software that is designed to perform a large number of repetitive tasks. This is done with automation tools such as internet bots. It's easy to distinguish between user data and automated data. Real-time bot detection technology can help you largely eliminate automatic threats. Account aggregation, card, scraping, denial of service (DoS) are several automated threats. 4. Bypassing the file bypass is also known as bypassing the catalog or rolling back. The main purpose of this web application attack is to access files and directories that do not fit under the root directory. Hackers gain access to arbitrary files and directories by manipulating file variables (e.g. using point slashes, .. /). This web application attack can be avoided by checking input. Implementing the necessary filters in a web application can eliminate the possibility that hackers will take over arbitrary files and folders. In addition, updated web server software or any patching software can protect your web application from attack bypassing the file path. 5. Team Injection (CMDi) Team Injection is likely to occur in a web application with possible vulnerabilities. Under this attack, notorious hackers enter the operating system commands, acting as a pseudo shell system that will then run through a web application. With this attack, the hacker can use his pseudo system shell as an authorized user to gain access to critical data. This may be due to the lack of a proper input verification system. Checking the white list will help you avoid a team injection. And the most effective way is to avoid the exec from the operating system if it is not required. Find out the security of apps with us It's easy Web application security. If you have a lot of interest and passion for acquiring real-time concepts and skills as an application security engineer, then join our Certified Application Security Engineer (C ASE) program. You'll be able to develop your technical skills to learn web protection, application design and architecture, input verification, cryptography, and more, either in .NET or Java. Sources: 20Papers/tCell_wp-stateofsecurity-2018-web.pdf Editor's Note: Review: Review by JoAnne Genevieve Green, Associate Professor - Cyber Crimes at the University of Pittsburgh and Dr. Ranjeet Kumar Singh, CEO, Sherlock Institute of Forensic Science India India long and synthetic division quiz pdf. 4.04 quiz synthetic and polynomial long division. section 02-03 sample quiz - synthetic and long division