1: Java Security (2nd Edition) - Ebook pdf and epub

Java Security, 2nd Edition, focuses on the basic platform features of Java that provide security--the class loader, the bytecode verifier, and the security manager--and recent additions to Java that enhance this security model: digital signatures, security providers, and the access controller. The book covers the security model of Java 2, Version , which is significantly different from that of Java

Java Language Security 41 3. Java Class Loaders 99 6. Introduction to Cryptography 7. Message Digests Security Resources B. The Secure Java Container. Quick Reference F. Another colleague overheard us and started asking about electronic commerce, which piqued the interest of a third colleague who wanted to hear all about virtual private networks. All this was interesting, but what I really wanted to talk about was how a Java applet could be allowed to read a file. Such is the danger of anything with the word "security" in its title: Complicating this issue is the fact that Java security and network security including Internet security are complementary and sometimes overlapping topics: This is a book about security from the perspective of a Java program. Who Should Read This Book? This book is intended primarily for programmers who want to write secure Java applications. This is particularly important with respect to security since no browser supports the Java 2 security model in its embedded virtual machine. Hence, end users and system administrators can read this book and skip over many of the programming examples to gain an understanding of the fundamental security features of the Java platform, and they can understand from each of its parts how the security features might be administered. This is particularly true for end users and administrators who are interested in assessing the risk of using Java: From a programming perspective, we assume that developers who read this book have a good knowledge of how to program in Java, and in particular how to write Java applications. When we discuss advanced security features and cryptographic algorithms, we do so assuming that the programmer is primarily interested in using the API to perform certain tasks. Hence, we explain at a rudimentary level what a digital signature is and how it is created and used, but we do not explain the cryptographic theory behind a digital signature or prove that a digital signature is secure. For developers who are sufficiently versed in these matters, we also show how the APIs may be extended to support new types of cryptographic algorithms, but again we leave the mathematics and rigorous definitions of cryptography for another book. The security model of the Java 2 platform is radically different from the model of Java 1. Many basic security interfaces such as the access controller were introduced in Java 2, and other APIs went through significant changes between Java 1. On the other hand, there were few changes between Java 2 version 1. We also discuss three Java extensions in this book: These extensions all rely on version 1. Conventions Used in This Book Constant width font is used for: Command Conventions There are some examples of commands scattered through the book, especially in sections and appendices that deal with administration. By convention, most examples are shown as they would be executed on a Unix system, e. On other systems, the names of the files would have to be changed to conform to that system e. In that case, the argument is often the same, although 2 Preface on Microsoft Windows systems you must specify a drive: When an argument requires a URL, we always specify the protocol to distinguish it from a filename, even though tools will often accept the string without a protocol. In these examples, then, only the file and URL names are different between platforms. Code Conventions The code examples in this book and in the online samples are organized by chapter. Each class belongs to a package based on the chapter when it is introduced; e. There are two simple ways of proceeding. The first is to remain in the directory where you unpacked the sources, not set your classpath, and reference everything by full package name. Test Your account number is Alternately, you can work in the directory containing the source and set your classpath as follows: Test Your account number is When required for space, commands may be continued on multiple lines, in which case a backslash character is used: Chapter 1 This chapter gives an overview of the security model the Java sandbox used in Java applications and sets the stage for the rest of the book. Chapter 2 This chapter discusses the parameters of the default sandbox and how the sandbox may be changed administratively. It provides instructions for end users and administrators on how to set up Java security policies including the use of policytool and introduces the

concepts by which these policies are implemented. Preface 3 Chapter 3 This chapter discusses the memory protections built into the Java language, how those protections provide a measure of security, and how they are enforced by the bytecode verifier. The security manager is responsible for arbitrating access to all local resources: Chapter 5 The access controller is the basis for security manager implementations in Java 2. Chapter 6 This chapter discusses the class loader, which is the class that reads in Java class files and turns them into classes. From a security perspective, the class loader is important in determining where classes originated and whether or not they were digitally signed and if so, by whom , so the topic of class loaders appears throughout this book. Chapter 7 This chapter provides an overview to the cryptographic algorithms of the Java security package. It provides a background for the remaining chapters in the book. Chapter 8 This chapter discusses the architecture of the Java security package and how that architecture may be used to extend or supplant the default cryptographic algorithms that come with the SDK. Chapter 9 This chapter discusses the APIs available to model cryptographic keys and certificates. Chapter 10 This chapter discusses how keys can be managed within a Java program: It also discusses programmatic transfer of digital keys. Chapter 11 This chapter discusses message digests: Chapter 12 This chapter discusses how to create, use, and implement digital signatures. It also contains a discussion of signed classes. Chapter 13 This chapter discusses the encryption available within Java Cryptography Extension JCE , which allows developers to encrypt and decrypt arbitrary data. Appendix A This appendix provides an annotated listing of the java. Appendix C Key management in Java 1. This appendix discusses how key management was handled in Java 1. Appendix D This appendix details how the security manager operated in Java 1. Although most of the techniques in this appendix have been superseded in Java 2, there are exceptional cases in Java 2 when you might want to follow the tips given in this appendix. Appendix E In the text, we discuss how to implement standard security providers. JCE security providers require some additional steps that are outlined in this appendix. Appendix F This appendix is a simple reference guide to the classes discussed in this book. It provides updated information on JCE version 1. The remainder of the text has been reorganized, including a new chapter that presents an overview of the default sandbox and how it is administered. Information and examples are now arranged by topic rather than by package: We treat the core Java security packages and the three optional security packages as an integrated API which is how it is scheduled to be packaged in the next release of Java. How to Contact Us We have tested and verified the information in this book to the best of our ability, but you may find that features have changed or even that we have made mistakes! Please let us know about any errors you find, as well as your suggestions for future editions, by writing to: You can access this page at: I offer my heartfelt thanks to Mike Loukides and Deb Cameron for stewarding me through the editorial process. Various drafts of this book were foisted upon my colleagues Mark Bordas, Charles Francois, David Plotkin, Nick Jacobs, and Henry Wong; I am indebted to each of them for their feedback and support, and to Lynne Doherty for all her support. In addition, I was extremely fortunate to receive technical assistance from a highly talented group of individuals: Finally, I must offer my thanks to James for all his patience and support and for putting up with my continual state of distraction during phases of this process. Please send notice of these errors or any other feedback to scott. Chapter 1 Java Application Security 1. SecurityPermission Name Various Security permission names are subject to wildcard asterisk matching and include all the valid strings that can be passed to the checkSecurityAccess method of the security manager All possible names are listed in here; as we explore the security. The bytecode verifier The bytecode verifier ensures that Java class files follow the rules of the Java language In terms of resources, the bytecode verifier helps enforce memory protections for all Java programs As. Java Application Security 13 1. Java Application Security security.

JAVA SECURITY 2ND EDITION pdf

2: Java Security, 2nd Edition [Book]

The book covers the security model of Java 2, Mannequin www.enganchecubano.com, which is significantly completely totally different from that of Java It has in depth protection of the two new crucial security APIs: JAAS (Java Authentication and Authorization Service) and JSSE (Java Protected Sockets Extension).

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3: The Java Sandbox - Java Security, 2nd Edition [Book]

Java Security, 2nd Edition, will give you a clear understanding of the architecture of Java's security model and how to use that model in both programming and administration. The book is intended primarily for programmers who want to write secure Java applications.

With Safari, you learn the way you learn best. Get unlimited access to videos, live online training, learning paths, books, tutorials, and more. In the Java 2 platform, however, this security model can apply to any Java application as well as to the Java Plug-in, which allows newer browsers to run Java 2 applets. The Java 2 security model is also configurable by an end user or system administrator so that it can be made less restrictive than earlier implementations of that model. This security model centers around the idea of a sandbox. The idea is when you allow a program to be hosted on your computer, you want to provide an environment where the program can play i. You may decide to give the program certain toys to play with i. This analogy works better when you consider it from the view of a close relative rather than from the view of a parent. The Java sandbox is responsible for protecting a number of resources, and it does so at a number of levels. Consider the resources of a typical machine as shown in Figure Externally, it has access to its filesystem and to other machines on the local network. For running applets, it also has access to a web server, which may be on its local private net or may be on the Internet. We can imagine a number of different-sized sandboxes in which a Java program might run: A sandbox in which the program has access to the CPU, the screen, keyboard, and mouse, and to its own memory. This is the minimal sandbox -- it contains just enough resources for a program to run. A sandbox in which the program has access to the CPU and its own memory as well as access to the web server from which it was loaded. This is often thought of as the default state for the sandbox. A sandbox in which the program has access to the CPU, its memory, its web server, and to a set of program-specific resources local files, local machines, etc. A word-processing program, for example, might have access to the docs directory on the local filesystem, but not to any other files. An open sandbox, in which the program has access to whatever resources the host machine normally has access to. The sandbox, then, is not a one-size-fits-all model. Expanding the boundaries of the sandbox is always based on the notion of trust: And so it is with Java programs: Applets, Applications, and Programs In early versions of Java, only applets were run within a sandbox. In the Java 2 platform, all programs have the potential to run in a sandbox. Applets that run through the Java Plug-in or the appletviewer will always run in a sandbox, and applications that are run via the command line or by clicking an icon on the desktop may optionally be set up to use a sandbox. Applications also have the option of programatically installing new versions of the sandbox. Hence, in the Java 2 platform there is little distinction between the security level of an applet and an application. There are programmatic differences, of course, but both are subject to the same security model, and the security model for both is administered and programmed in the same way. There is one significant difference, however: This is typically done by the end user by specifying a command-line parameter; it may be done by the program developer who specifies that parameter in a script that starts the application, and it may be done by the developer who inserts code into his program. Any program, including an applet, can change the behavior of the sandbox under certain circumstances. This moves the definition of the security policy to the end user or system administrator of the machine running the program. Each of the features of the Java platform that appears in a rectangle plays a role in the development of the Java security model. In particular, the elements of the Java security policy are defined by: The bytecode verifier The bytecode verifier ensures that Java class files follow the rules of the Java language. In terms of resources, the bytecode verifier helps enforce memory protections for all Java programs. As the figure implies, not all classes are subject to bytecode verification. The class loader One or more class loaders load all Java classes. Programatically, the class loader can set permissions for each class it loads. The access controller The access controller allows or prevents most access from the core API to the operating system, based upon policies set by the end user or system administrator. The security manager The security manager is the primary interface between the core API and the operating system; it has the ultimate responsibility for allowing or preventing access to all system resources. However, it

exists mostly for historical reasons; it defers its actions to the access controller. The security package The security package that is, classes in the java. Although it is only a small box in this diagram, the security package is a complex API and discussion of it is broken into several chapters of this book. This includes discussions of: The security provider interface -- the means by which different security implementations may be plugged into the security package Message digests.

4: CiteSeerX â€" Citation Query Java Security, 2nd Edition

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5: - Java Security (2nd Edition) by Scott Oaks

After reading the book, I was able to gain exposure to many complex areas of the Java Security/JCA/JCE APIs to include Class loaders, Byte Code Verifiers, Policy Files, Security Manager, Access Controller, Permissions, Message Digests, Data Encryption, Key Agreements, Digital Signatures, and Digital Certificates.

6: Java Application Security - Java Security, 2nd Edition [Book]

Java Security, 2nd Edition, will give you a clear understanding of the architecture of Java's security model and how to use that model in both programming and www.enganchecubano.com book is intended primarily for programmers who want to write secure Java applications.

7: The Key Management API - Java Security, 2nd Edition [Book]

Java 2 Network Security, Second Edition is up-to-date, authoritative, and thorough-and if you're using Java in enterprise development, it's utterly essential.

8: Class www.enganchecubano.comrmission - Java Security, 2nd Edition [Book]

The security manager is a partnership between the Java API and the implementor of a specific Java application or of a specific Java-enabled browser. There is a class in the Java API called SecurityManager (www.enganchecubano.comtyManager) which is the linchpin of this partnership -- it provides the interface that the rest of the Java API uses to check whether particular operations are to be permitted.

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