Overview

Java Remote Method Invocation (Java RMI) lets you create distributed applications in Java.

RMI allows an object to invoke methods of remote Java objects running on another Java Virtual Machine (JVM), possibly on different hosts. RMI uses object serialization to marshal and unmarshal parameters, and doesn't truncate types, supporting true object-oriented polymorphism.

RMI Security Recommendations

Follow these recommendations to improve the security of your RMI applications.

- See Serialization Filtering and follow the best practices there to protect your applications.
- Follow Secure Coding Guidelines for Java SE.
- Ensure that you run a security manager when using RMI, either on a client or server. See The Security Manager.
- Establish a reasonable security policy. For example, grant SocketPermission and allow listen, accept, connect, and resolve actions only among hosts communicating with RMI. Don't have the security policy grant AllPermission. See Permissions in the Java Development Kit and Default Policy Implementation and Policy File Syntax.
- Restrict the communication to be local if RMI is being used only for communication among JVMs on the local host. To accomplish this task, specify the appropriate socket permissions in the security policy file. Alternatively, you can use RMI APIs directly to restrict connections only to the local host. See the RMISocketFactory class.
- Ensure that the value of the java.rmi.server.useCodebaseOnly property is True. By default, the java.rmi.server.useCodebaseOnly property is set to True. If you set this property to False, then remote code loading is enabled, which increases the level of security risk to the system.
• Run RMI over Secure Sockets Layer (SSL)/Transport Layer Security (TLS) and request authentication for both server and client. This is possible using custom socket factories. An application can export a remote object to use custom socket factories that create sockets of a desired type (for example, SSL sockets). Using this technique, an application can use SSL socket communication instead of the default socket communication. See the following:
  – SslRMIClientSocketFactory class
  – SslRMIServerSocketFactory class
  – Java Secure Socket Extension (JSSE) Reference

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