

# Code Signing Guide

<u>Microsoft Authenticode</u>	<u>How to produce a CAB</u>
<u>Mozilla FireFox</u>	<u>How to produce a JAR</u>
<u>Sun Java Plug In</u>	<u>Internet Explorer</u>
<u>Office 2007 and VBA</u>	

Signed code assures our customers and our internal users that the code being used (Active/X, Java, .DLLs, Office files with macros) is created by an authorized developer as opposed to code manufactured by an imposter. Code Signing provides evidence of code tampering. If code is modified following being signed the signature will become invalid.



When executing signed code a warning is displayed on the first use. The user is prompted to "trust" the code signer for this use and, optionally, on future executions as well. Bank of America currently has a policy that prohibits distributing code signing certificates. All code signing is done by the Code Signing team. This is a manual process, however a procedure is in place to insure your code can be deployed to production in a timely manner. Below is the procedure.

## Code Signatures that Bank of America provides:

[Microsoft Authenticode](#)  
[Java Archive \(Sun Plug In\)](#)  
[Office 2003 and VBA](#)

### File format types:

Authenticode (\*.exe;\*.ocx;\*.dll;\*.vbs;\*.msi;\*.html;\*.js;\*.cs;\*.xml;\*.lnk;\*.cab;\*.vbe)  
ClickOnce Application Manifest Files (\*.manifest)  
ClickOnce Deployment Manifest Files (\*.application;\*.vsto;\*.xbap)  
Java Jar Files (\*.jar)  
Control Panel Extension (\*.cpl)  
Java Cab Files (\*.cab)  
Word 2003 Files (\*.doc;\*.dot;)  
Excel 2003 Files (\*.xls;\*.xlt;\*.xla;\*.xlm;\*.xlc;\*.odc)  
PowerPoint 2003 Files (\*.pps;\*.ppt;\*.ppa)  
Visio 2003 Files (\*.vsd;\*.vdx)  
Infopath 2003 Files (\*.xsn;\*.xsf)  
Yahoo Widget (\*.widget)  
Silverlight (\*.xap)

NOTE: for MS Netscape browsers

If you are not using the Sun Java environment which is compatible to both browsers, and you'd like the user to be able to use either browser, then your code must be signed by both Authenticode (in a .cab file) and Object-Signing (in a .jar file). Then you can modify your html like the example below. The browser will determine which signature it validates.

Once you've created both .cab and .jar archives for a given applet, you can use both in the same piece of HTML code; each browser will select the archive it understands. Use code like this:

```
title My Wonderful Signed Applet</title>
<hr>
<applet code="MyApplet.class" ARCHIVE="MyApplet.jar" width=550 height=350>
<param name="CABBASE" value="MyApplet.cab">
</applet>
<hr>
```

## Procedure for signing code:

Microsoft Authenticode

### Developer Tasks

1. Create .cab file(s)
2. Email .cab file(s) to Code.Signing@bankofamerica.com
3. In the email, the developer must also specify what the title of the application will be. This can be passed to the signing tool and published as the proper name. For example, your cab file may be FundWkSys.cab, but the proper name is "Funding Workstation system" which would be the name the end user sees.

Refer to the notes on producing a cab file, if needed.

### Bank of America Security Tasks

E&O will sign the file and return to the Developer.

### Next Developer Steps

Incorporate the signed file to your website. Put the signed .cab archive into the web server directory containing the main class of your applet. Change the .html file that invokes the applet so that it mentions the archive:

```
<title>My Wonderful Signed Applet</title>
<hr>
<applet code="MyApplet.class" width=550 height=350>
<param name="CABBASE" value="MyApplet.cab">
</applet>
<hr>
```

Note: if you need to have an applet with multiple .cab archives, you can use the CABINETS applet parameter:

```
<param name="CABINETS" value="MyApplet.cab,MyApplet2.cab">
```

.jar file archive and signs the .jar file. Because of this, the code must not be archived. For convenience, the developer can send a .jar or a .zip file, but then we must extract the code, then run the commands to package and sign it.

### Developer Tasks

1. Package files with either WinZip or the jar utility
2. Email zip file to Code.Signing@bankofamerica.com
3. Specify that these files are to be signed with Netscape Object Signing

### Bank of America Security Tasks

E&O will sign the file and return to the Developer.

## Next Developer Steps

Incorporate the signed file to your website. Put the signed .jar archive into the web server directory containing the main class of your applet. Change the .html file that invokes the applet so that it mentions the archive:

```
<title>My Wonderful Signed Applet</title>
<hr>
<applet code="MyApplet.class" ARCHIVE="MyApplet.jar" width=550 height=350>
</applet>
<hr>
```

## Sun Java Plug In

### Developer Tasks

1. Create .jar file(s)
2. Email file(s) to Code.Signing@bankofamerica.com
- ~~3. Specify that these files are to be signed for the Sun Java Plug In~~

Refer to the notes on producing a jar file, if needed.

### Bank of America Security Tasks

E&O will sign the file and return to the Developer.

### Next Developer Steps

Incorporate the signed file to your website. Check the current documentation on using JARrelated APIs. Check out Sun Java's online help at:  
<http://java.sun.com/docs/books/tutorial/index.html>.

### MS Office documents with VBA (**Visual Basic Application**) modules (**MACROS**)

If you distribute Microsoft Office macros to people outside your office, whether as Word documents with code in them, Excel workbooks with code in them, or any type of Office add-in, you need to have these files signed by Bank of America Security.

Given the ease with which Office documents can propagate viruses, using a digital certificate is a required practice.

When the customer opens, loads, or uses an Office file that contains VBA code, and that file has been signed by a digital certificate, all of that file's functionality will be available regardless of the macro security level setting active on the customer's PC right then.

### Developer Tasks

1. Package files with either WinZip utility
2. Email zip file to Code.Signing@bankofamerica.com
3. Specify that these files are to be signed with Microsoft Office VBA tool

## Bank of America Security Tasks

E&O will sign the file and return to the Developer.

### Next Developer Steps

Depending on your target audience, the signed Office code can be distributed via email or added to a web page.

#### Producing a CAB file

You will need two files which Bank of America Security can provide - CABARC.exe and cabMS.bat. First time using the cabMS.bat, change the environmental variable - CODETOOL to the directory that CABARC.exe is installed on your workstation.

Create a directory from your root (\) with the same name as the cab file you will be creating and copy program into the directory - may use subfolders. In this example, we will be using FundAccountingWorkstation. (Note: this may already be the path that the developer used when creating the program - if so, no changes.)

Archive the directory using:

CabMS filename \_\_\_\_\_

Where filename is the name of the program (i.e.: FundAccountWorkstation)

~~Continue with the procedure for signing for Microsoft Authenticode.~~

#### Producing a JAR file - (Sun Java PlugIn)

Although the documentation I've read does specify that we can use Netscape's signtool to sign jar files which then can be used on Microsoft and Netscape browsers, we have yet to be successful at it. It is possible to create both a cab and a jar from the same program, specifying them both in the html file and which ever browser the client activates, it activates the proper code. However, the Sun Java Plug In environment enables web pages to run using Sun's Java 2 Runtime Environment, Standard Edition (JRE) instead of the web browser's default virtual machine. Sun's JRE provides a Java Compatible TM environment for widely adopted web browsers - that means consistency and reliability when running applets.

Basic syntax is:

To add all the files in a particular directory to an archive (overwriting contents if the archive already exists):

```
jar cvf Pass_Applet.jar *
```