

Emulation Assistant

Emulation Assistant provides automated access to the legacy executables present on the file systems. A detailed analysis on creating the legacy executables is mentioned in the document “Tutorial to create and test automation scripts”. The approach focuses on improving user navigation of and access to programs located within a networked collection of CD-ROM ISO images presented as a single filesystem and accessible through a web interface (<http://www.cs.indiana.edu/svp/>). When a user clicks on a link to a virtual disk image for which an installation script is available, a Java applet executes a helper application on the user’s workstation taking the form of a “wizard” that informs the user and provides the option of mounting the ISO image within a guest Windows XP image.

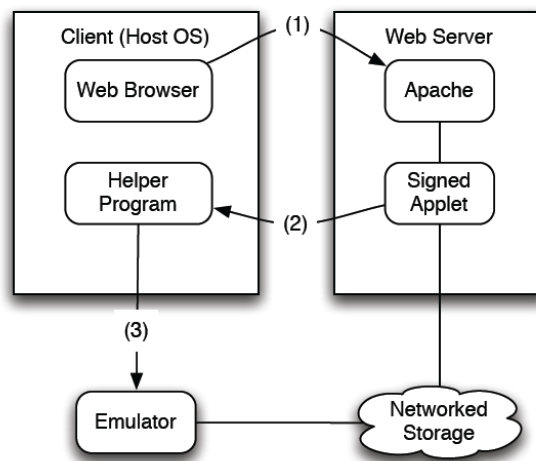


Figure 1: Client request for networked resource.

Getting Started:

You will need the following:

- 1) Latest VMware Workstation/Server on Windows Machine hosting a Windows XP Professional Virtual machine. The details about where to find and how to download the Virtual Machine and the Workstation/Server is provided in “Tutorial to create and test automation scripts” document.
- 2) VMware VIX API
- 3) MIT Kerberos for Windows
- 4) OpenAFS client for Windows. You will need to be added to AFS group to login to the AFS client. Please contact Dr. Geoffrey Brown to do this.
The instructions on installing Kerberos and OpenAFS can be found on IU Knowledge Base.
- 5) Latest Microsoft Visual Studio.

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VIRTUAL MACHINE DETAILS

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- SERVICE PROVIDER: VMware Server Console
- VIRTUAL MACHINE: Windows XP Professional
- USERNAME: iucs
- PASSWORD: vmware
- LOCATION ON MY COMPUTER: C:\Virtual Machines\Windows XP Pro\Windows XP Professional.vmx
- LOCATION OF VM DESKTOP: C:\Documents and Settings\iucs\Desktop (This is where the install script is copied)
- > AFSBrowser was written on Microsoft Windows Vista Home Premium, Service Pack 2
- > IMPORTANT: Auto Log-in MUST be enabled or else installScript will not finish.
 - See: <http://www.microsoft.com/windowsxp/using/setup/learnmore/tips/knox2.msp>
- > IMPORTANT: Make sure to read the snapshot details or else AFSBrowser may not function 100% properly!

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IMPORTANT DETAILS ABOUT SNAPSHOT

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- > AFSBrowser works using a snapshot of a virtual machine.
- ! -> CRUCIAL: The STATE of this virtual machine IS CRITICAL in order for AFSBrowser to function properly!!
- ! -> CRUCIAL: The snapshot MUST MUST MUST be of a virtual machine whose state is POWERED OFF!!!
 - To do this, take a snapshot of the machine BEFORE you turn it on.
 - If the machine is already powered on, turn it off, and then take a snapshot.
- ! --> The snapshot CANNOT be of a virtual machine that is logged in.
 - If the snapshot is of a VM that is logged in, AFSBrowser will not be able to mount the .ISO as the CD-DRIVE. As a result, the install script will not find the .ISO image it needs and will not work.
- ! --> The snapshot CANNOT be of a virtual machine that is at the log-in screen.

Building and testing Emulation Assistant:

The source code for Emulation Assistant is a C# code and can be found on the cvs repository on svp@troy.cs.indiana.edu as Emulation2011. The document "CVS.txt" contains all the details on the access, checkout and check in information about the repository.

The Emulation Assistant directory contains five sub-directories. The install directory contains the code to install the emulation assistant as a desktop application on your computer. The AFSBrowser contains the actual Emulation Assistant code that interacts with the Virtual Machine (VM) and installs the CD-ROM image contents from the AFS on the VM. Java Files and Cert contains code for Java Applet to run Emulation Assistant through a browser.

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REFERENCES
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- > In this project, I had to add a reference to VixCOM in order for VixWrapper.cs to work. To do this, I went to the 'Solution Explorer', right-clicked 'References', then clicked 'Add Reference' and found VixCom.
- > This should never be an issue, however if you get a "VixCOM not found error" (or something to that extent) first check that the reference is still there. Like I said, this should never be an issue.

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Build Install
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1. Open the solution (.sln) file in Mircrosoft Visual Studio.
2. Click on Build, then Build Solution.
3. Now go to Install directory and you can find the .EXE in ...\Install\bin\Debug\
4. If you leave the .EXE in this location, you can run it and it should work. If you want to move Install.exe to another location you must also move the Interop.VixCOM.dll file AND AFSBrowser.exe to the same new location. In short, all three of these files must be in the same directory for the program to work successfully.

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Build Legacy Emulation Assistant
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1. Open the solution (.sln) file in Mircrosoft Visual Studio.
 - This should be either AFSBrowser.sln or possibly Legacy Emulation Assistant.sln
2. Click on Build, then Build Solution.
3. Now go to AFSBrowser directory and you can find the .EXE in ...\AFSBrowser\bin\Debug\
4. If you leave the .EXE in this location, you can run it and it should work. If you want to move AFSBrowser.exe to another location you must also move the Interop.VixCOM.dll file to the same new location. In short, AFSBrowser.exe and Interop.VixCOM.dll must be in the same directory for the program to work.

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How to create Certificate to Sign Script
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- yourkey can be changed to whatever you want your key to be named
- yourcert.crt can be changed to whatever you want it to be named, but must have .crt extension
- RunExecutable.java and RunExecutable.class should be the name of whichever java file you want to sign. In this case, we want RunExecutable.java to be signed.

Enter:

keytool -genkey -kesyalg rsa -alias yourkey

Now we make the certificate:

```
keytool -export -alias yourkey -file yourcert.crt
```

Now we have to sign the applet. Just make a *.bat file including this:

```
javac RunExecutable.java  
jar cvf RunExecutable.jar RunExecutable.class  
jarsigner RunExecutable.jar yourkey
```

The batch-file compiles the applet, makes a jar-archive and signs the jar-file.

The HTML-code to display the applet:

```
<applet code="RunExecutable.class" archive="RunExecutable.jar" width="600" height="500">  
<param name="exePath" value="C:\Legacy Emulation Assistant\Legacy Emulation Assistant.exe">  
<param name="afsPath" value =  
  "\afs\iu.edu\public\sudoc\volumes\04\30000038669341\30000038669341.iso">  
</applet>
```

- param "exePath" is the path to where Install.exe will put Legacy Emulation Assistant.exe

- param "afsPath" will be the path to an .ISO image from a web page.

Example: A user clicks a button, from a web page, to open an .ISO, "afsPath" should be the path to that .ISO

Source for signing script: <http://www.captain.at/programming/java/>

NOTE: For the java code and certificate to work like you want them to, RunExecutable.class, RunExecutable.jar and myCert2.crt must be in the same directory as the html file that contains the applet.

The section followed is a set of screenshots on using emulation assistant:

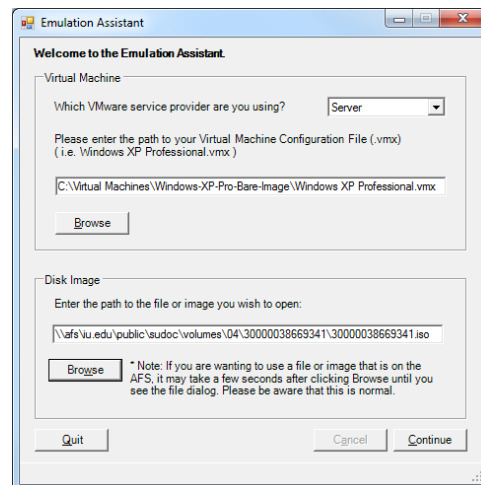


Figure 2: Emulation platform and Disk Image selection.

* A good .ISO image to test with is:

<\\afs\iu.edu\public\sudoc\volumes\04\30000038669341\30000038669341.iso>

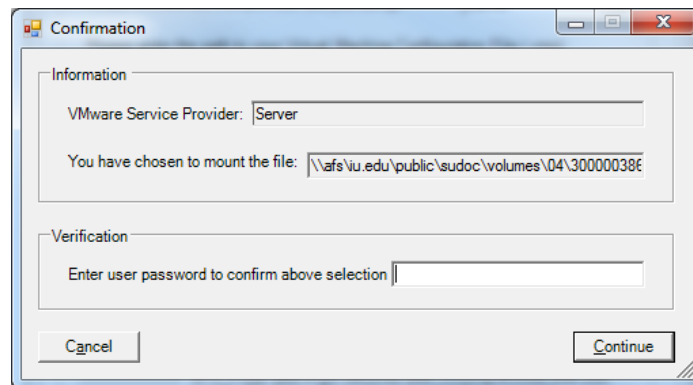


Figure 3: Confirmation for VMware Server.

VMware Server controls VM via web access and requires additional login information. The password for bl-soic-5ld1wh1 and bl-soic-5ky2wh1 machines in the lab is Informatics2011 .

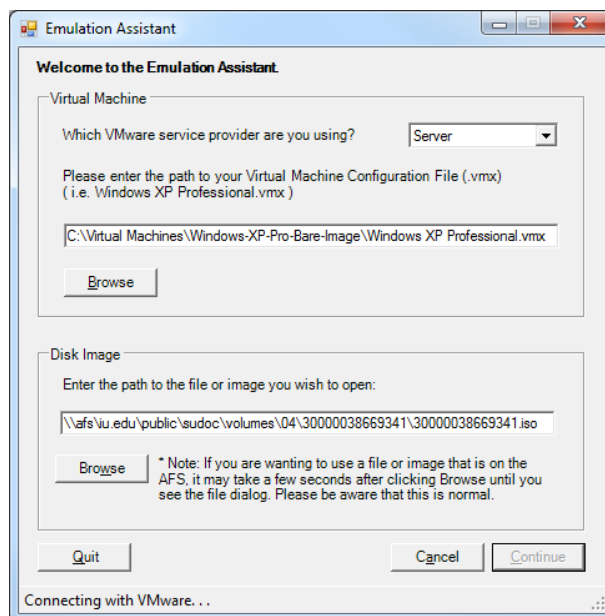


Figure 4: Interaction begins

The Emulation Assistant starts interacting with the VM, copies the executable associated with the iso on the VM desktop and runs it.

Other information:

For multiple disc ISOs or the ISOs with additional information, just enter the path for the ISO file and the program will automatically mount other ISOs on the VM. The present code works for mounting atmost three ISOs simultaneously.