Microsoft SoftGrid Application Virtualization 4.2

Microsoft Consulting Services (MCS) Sequencing Guide

January 31, 2008

Prepared by Microsoft Services

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Introduction to the MCS Sequencing Guide
Properly sequencing applications is the key to a successful Microsoft SoftGrid Application Virtualization implementation. As such, it’s important to follow Microsoft’s recommended practices and be aware of the different options when sequencing. This document covers MCS practices for setting up the sequencer, sequencing best practices, an example of sequencing, important information related to updating packages, and finally examples of advanced OSD scripting.

Sequencer Workstation Configuration
Proper configuration of the sequencing station is imperative to ensure that applications will function properly when streamed to a client. Microsoft recommends the following configuration when sequencing:

- **Sequence on a machine that is the lowest common denominator for the target clients.** If the target clients consist of Windows XP machines and Windows 2000 machines, Microsoft recommends sequencing on Windows 2000. Applications sequenced on Windows XP and executed on Windows 2000 will still have a high likelihood of functioning properly; however, the odds are better when sequencing on Windows 2000 and deploying to Windows XP.

- **If Microsoft Office is part of the base image of the client, then include it as part of the base image of the sequencer.** Many applications will install differently if they recognize that Microsoft Office is already installed on the machine. Thus, if an application is expected to integrate with Microsoft Office, it’s best to attempt sequencing on a machine with Office already installed and activated. This assumes that a Microsoft Office suite will be installed locally on all client PCs.

- **Create an ODBC DSN setting as part of the Sequencer base image.** If no ODBC DSN setting exists on the base Sequencer image and the application being packaged creates one, the entire registry key associated with ODBC settings will become virtualized. This will prohibit the packaged application from seeing any ODBC DSN settings that exist on the base client machine. If an ODBC entry already exists on the Sequencer machine, only the ODBC settings will become virtualized, and the ODBC settings on the Client will be merged with the ODBC settings in the package.
  
  - The following locations can be checked to determine ODBC information was captured:
    - Search for odbc.ini: It will be located in the VFS\%CSIDL\WINDOWS% folder
    - HKLM\Software\ODBC\ODBC.INI\ODBC Data Sources
    - HKCU\%SFT_SID%\Software\ODBC\ODBC.INI

  - Here are step by step instructions on how to create a dummy DSN setting.

  1. Open the Administrative Tools → Data Sources (ODBC) applet.
2. Select the User DSN tab.

![ODBC Data Source Administrator](image)

An ODBC User data source stores information about how to connect to the indicated data provider. A User data source is only visible to you and can only be used on the current machine.

3. Click Add…

![Create New Data Source](image)

4. For “Select a driver…”, select SQL Server and click Finish.
5. For Name, enter “dummy”.
6. For Description, enter “Required for application sequencing”.
7. For Server, enter “dummy”.
8. Click Next.

9. Deselect the “Connect to SQL Server to obtain settings...” checkbox.
10. Click Next.
11. Click Next.

12. Click Finish.
13. Click OK. Note: Do not click “Test Data Source…” since this test would fail.

- Create an ODBC System DSN setting as part of the Sequencer base image as follows:
  1. Select the System DSN tab.
2. Click Add…

3. For “Select a driver…”, select SQL Server and click Finish.
4. For Name, enter “dummy”.
5. For Description, enter “Required for application sequencing”.
6. For Server, enter “dummy”.
7. Click Next.

8. Deselect the “Connect to SQL Server to obtain settings...” checkbox and click Next.
9. Click Next.

10. Click Finish.
11. Click OK. Note: Do not click “Test Data Source...” since this test would fail.

12. Click OK to close the ODBC applet.
- **Add a dummy printer device as part of the Sequencer base image.**

  Printers act in the same manner as ODBC settings. It is necessary to include a dummy printer device in the sequencer PC image. Create a dummy printer device as follows:

  1. Open the Control Panel → Printers and Faxes applet.

  ![Printers and Faxes applet](image)

  2. Select “Add a Printer”.

  ![Add Printer Wizard](image)

  3. Click Next.
4. Select “Local printer attached to this computer”.
5. Deselect the “Automatically detect and install my Plug and Play printer” checkbox.
6. Click Next.

7. Click Next.
8. For Manufacturer, select “HP”.
9. For Printers, “HP LaserJet 4”.
10. Click Next.

11. For Printer Name, enter “Dummy”.
12. Click Next.
13. For “Do you want to print a test page?”, select No and click Next.

14. Click Finish.
15. Wait for the printer driver installation to complete.


- **Setup your sequencer machine with multiple partitions.** It is recommended that the sequencer machine be configured with at least two primary partitions. The first partition C: should have the operating system installed and should be formatted as NTFS. The second partition Q: is used as the destination path for the application installation.

- **Temp Directory.** The sequencer uses the %TMP%, %TEMP%, and its own Scratch directory for temporary files. These locations should contain free disk space equivalent
to the estimated installation size. The scratch directory where the sequencer will temporally store file generated during the sequencing process. You can check the location of the Scratch directory by launching the sequencer, clicking Options from the Tools menu, clicking the Paths tab, and then noting the Scratch Directory box. Placing the temp directories and the scratch directory on different hard drive spindles can improve performance during sequencing.

- **Shutdown Other Programs.** Processes and scheduled tasks that normally run on your computer can slow down the sequencing process and cause irrelevant data to be gathered during sequencing. These programs should be shutdown before you begin sequencing. Some of these programs include:
  - Windows Defender
  - Antivirus Software
  - Disk defragmentation software
  - Windows Search
  - Any open Windows Explorer session

**MCS Recommended Practices for Sequencing**

This section covers MCS recommended practices for sequencing applications.

- It is recommended that you familiarize yourself with the installation and execution of the application prior to sequencing. Be sure to read all installation instructions associated with the application. It is also recommended that you learn how the application runs and the components of the application the user will need. To improve the process of sequencing an application, one should document step by step the installation and post-configuration procedures for the application. Step-by-step documentation will insure that no unnecessary troubleshooting occurs during the sequencing process since no important steps will be skipped. Items to document include:
  - What application components are needed and will be required to complete the installation of the application?
  - What updates such as adding new files to the package need to be performed in the sequencer after the installation?
  - What post-installation configuration steps need to take place in the sequencer?
  - What do users commonly do with this application immediately after its launch?
  - Does this application do something that SoftGrid currently does not support? If so, check the Microsoft Knowledge Base to see if there is a workaround available.

- When sequencing on Windows Vista ensure sure you have UAC enabled on the sequencing machine if the client machine you are deploying the application to will have UAC enabled as well.

- Always document the sequencing process step-by-step creating a “recipe” using a standardized template. Documenting the sequencing process step-by-step will allow you to hand the recipe to someone else in your organization and have them recreate the same package. Step-by-step documentation will ensure that no unnecessary troubleshooting occurs since no important steps will be skipped.
Use the Comments field in the sequencer (Abstract Tag) to record the version and service pack of the sequencer, the date, and the user performing the sequence. This will allow you to revisit the sequence later and have a record of this information.

Sequence to the client destination drive, which defaults to Q:. Both the Installation Directory and the Asset Directory should be on 'Q'. The Sequencer does contain functionality to handle exceptions. One can sequence to the 'C:' drive for applications that will only install to 'C', for example.

Sequence to a unique, 8.3 directory name. This applies to both the Asset and Installation directories. (Q:\MYAPP' is correct, 'Q:\My Application' is incorrect. Q:\MYAPP.001 is also correct.)

Sequence to a folder in the root of the drive, not to a subdirectory. ('Q:\MYAPP' is correct; ‘Q:\' is incorrect; 'Q:\Temp_Junk\MYFOLD' is incorrect). If the suite has multiple parts, install each application in a subdirectory of the Asset Directory. For example with Q:\AppSuite as your Asset Directory Q:\AppSuite\Oracle\App.

Always use globally unique Paths, SUITE tags, and Package names across the set of application sequencings. Do not install, for example, multiple Microsoft Office sequencings to the same Asset Directory name or SUITE tag. Use a standardized naming scheme for the Asset Directory that can be incremented for new revisions, for example Q:\OFFXP.v1 or Q:\OFFXP.001.

Configure and test the application in the Installation Phase. Completing the installation of an application often times requires performing several manual steps that are not part of the application installation process. These steps can involve configuring a connection to a ‘back-end’ database, copying updated files, etc. Do this configuration in the Installation Phase and run the application to make sure it works.

Execute the application, multiple times if necessary, until the program is in a static state in the Installation Phase. For example, run Acrobat multiple times to get past all registration and dialog box requests. These applications perform different tasks on first launch, second launch, and sometimes subsequent launches. The multiple launches will make sure only the relevant application code into Feature Block 1 during the execution phase.

Use the Application Wizard to launch each executable in a suite of applications. This will ensure that each application will have the required initial launch data on the SoftGrid Client.

Sequence as much as possible in a single pass of the Installation Phase. Do not “Stop Monitoring” after each installer, unless the application requires reboot. There is no reason to re-enter the Installation Phase via “Continue Monitoring” unless a reboot task is required. If a reboot dialog pops up click yes to reboot. The sequencer will intercept the reboot. Click “Stop Monitoring” to process the reboot task and then select “Begin Monitoring” again.

Disable “Install on First Use”. Some applications have the option to “Install on First Use” for certain components. It is required that none of the components are sequenced with this option. It is necessary to choose either “Run from My Computer” (install this component) or “Not Available” (do not install this component). For application components that will not be used by any of the targeted users it is recommended that the components not be installed.

Disable “Auto Update” features. Some applications have the ability to check a web site or a server for the latest application updates. This feature should be turned off, as version control should be performed via sequencing new versions.

Operations made during the Application phase will be included in Feature Block 1. As a general rule when building feature block 1 make sure you execute your most common operations so that they are included in the initial streaming of the application and you have an
accurate feature block 1. If this is not done then users will see delays as they start to use the application and will regard it as being slow if many of the features they use are not in feature block 1. Additionally if you are in an environment where bandwidth is limited then you want to have an accurate feature block 1 so that users are not constantly making calls to the server to download additional files in cache.

- For certain users, such as laptop users, it may be necessary to load the entire application into cache. The reason for this is that while an application can function while disconnected from the network it cannot pull down additional information into its cache. Any mobile users or users that will be disconnected from the network should have the entire application loaded in their cache. This can be done manually from the client by right clicking on the application in the client and selecting add or by running the sfttray.exe command with any of the following options:

  - /load "application name" loads the application 100% into cache.
  - /load "filename.osd" loads the application 100% into cache.
  - /loadall loads all applications the user has access to 100% into cache.

- Additionally if you plan on deploying to terminal servers you should load the entire application into cache. This will minimize any additional utilization of the processor or network while multiple users are logged into the server.

- There are several online articles relating to sequencing best practices you should examine as well:
  - Microsoft Support: [http://support.microsoft.com/kb/932137](http://support.microsoft.com/kb/932137)

### Gauging Applications for Sequencing

All applications are different and therefore no application will require the same amount of time to sequence. However, that being said we can put sequencing into four different categories based on the complexity of the application, size (in both size on disk and number of files), and finally reliance on resources outside of the virtual application. Another item to take special note of before sequencing begins: nothing will slow down the sequencing process more than not having access to someone who inherently understands the full functionality of the application.

Additionally in this section approximate sequencing times have been added, however that being said these are very general in nature. Every application will be different, and the times are present only to assist in estimating the time required for a project.

<table>
<thead>
<tr>
<th>Application Type</th>
<th>Description</th>
<th>Time Scale</th>
</tr>
</thead>
</table>
Simple

These applications are normally small ones. An example of an application in this category would be WinZip or Adobe Reader. These applications are very straightforward and normally small in size (usually under 100MB). Very little if any modifications are needed.

Typical sequencing time less than 1 hour

Moderate

These applications might require slight changes while sequencing to function correctly. Or in some cases they may require no changes but have a larger install that takes more time. And in rare occurrences you will encounter both. Changes you might encounter in these packages would be on the order of making changes to the registry, altering the .osd file to launch with additional parameters and scripts, or finally there maybe additional applications needed to install together as a suite so they can function together. This is probably the most common application type you will run into.

Typical Sequencing time between 1-4 hours

Complex

These are large applications or applications that take four or more hours to install, significant amounts of customization to function in the virtual environment, or both. Packages like this will normally be 3-4 GB in size and may require compression to get the package under the 4GB SoftGrid limit. Other hurdles you may encounter are the applications reliance on files being in a specific place and functions hard coded to that install. These applications may require you to manually edit batch and command files to point to resources in the virtual environment. If this is the case it is highly recommend utilizing a program that can scan multiple files and make several changes at once. You also may be required to install a device driver separately since drivers cannot be virtualized. Applications of this complexity can be sequenced however it is imperative that before you begin that all the pieces are in place. All knowledgeable resources should be engaged and available, sequencing hardware should be better than average, and finally sequencing applications such as these should be done by an experienced sequencer who has experience with the SoftGrid product.

Typical Sequencing time between 4-8 hours but could be longer depending on the size and number of files

Sequencing Limitations

Sometimes there are applications that cannot or should not be sequenced. Also there are certain limitations with SoftGrid. Here is a short list of application functions and limitations of the software.

<table>
<thead>
<tr>
<th>Limitation</th>
<th>Description</th>
</tr>
</thead>
</table>
| Applications that when sequenced are over 4GB in size | • By utilizing compression within the sequencer it’s possible to take applications that are larger than 4GB and get them below the limit.  
• However after compression the application |
must be smaller than 4GB.

<table>
<thead>
<tr>
<th>Applications that start services at boot time</th>
<th>SoftGrid requires a logged in users to initiate the launch of an application.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications that require device drivers</td>
<td>SoftGrid cannot virtualize drivers. It is possible to bypass this issue and install the driver locally on the target computer.</td>
</tr>
</tbody>
</table>
| Applications that are required by several applications for information or access | For example you have a program what will initiate a command and launch another program. Normally you would include both programs in the same suite however if this application launches or initiates commands in several applications it may not be feasible for you to include all of the applications in the same suite.  
    • This is especially true if one of the reasons you are deploying SoftGrid is to avoid application conflicts. Always remember the virtual “bubble” can see the OS and what’s installed on it but the OS cannot see the “bubble” and interact with it. On the same note remember that one “bubble” cannot see another. |
| Applications that are a part of the OS      | Such as Internet Explorer |
| Applications that use COM+                  | i.e. DLL’s that run in Dllhost.exe |

**Sample Sequencing**

This section describes some of the key points to remember during sequencing.

**Package Configuration**
Figure 1 - Package Configuration Wizard

When filling out the Package Configuration Wizard, the following conventions are Softricity best practices:

<table>
<thead>
<tr>
<th>Configuration Wizard Component</th>
<th>Best Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suite Name</td>
<td>The Suite Name must be unique. Microsoft uses the following naming convention: `&lt;AppVendor&gt;<em>&lt;AppName&gt;</em>&lt;Version&gt;_&lt;MNT</td>
</tr>
<tr>
<td>Comments</td>
<td>Microsoft indicates the person who performed the sequence, the date the Sequence was created and the version of the Sequencer. This information is recorded in the ABSTRACT element of the OSD file, and can be used to understand the pedigree of the sequence</td>
</tr>
<tr>
<td>Hostname</td>
<td>SoftGrid server name or virtual address for multiple SoftGrid servers</td>
</tr>
<tr>
<td>Path</td>
<td>Microsoft recommends keeping the Path and the Suite Name the same</td>
</tr>
</tbody>
</table>

Application Wizard
When editing the shortcuts in the Shortcut Wizard, keep in mind that the name that displays on the shortcut as a result of performing a Desktop Refresh is what has been entered in the name field above. Therefore, it’s best to make sure that the Name will be meaningful to the end user. In the example above, both the Name and Version fields were modified to be easier for the end user to identify the application.

In order to make management of the application easier, it’s best to strip any spaces or special characters out of the OSD File Name.

Thought they’re uncommon it’s important to mention that asymmetrical icons can cause problems within the SoftGrid Management Console. An example would be an icon that is 16 x 32 pixels rather than a symmetrical icon which would be 16 x 16 or 32 x 32. A quick way to determine if an icon is asymmetrical is to drag the icon to a blank Internet Explorer page. If the icon is not asymmetrical then it will display in Internet Explorer. Using asymmetrical icons can cause the SoftGrid Management console to crash.

Figure 2 - Application Wizard
Saving the Package

Figure 3 - Saving a Package
When saving a package, Microsoft recommends using the SUITE name as the package name, and to place the entire contents of the package (SFT, ICO, OSD and SPRJ) into a folder with the same name as the SUITE. This will make it easy to copy the entire folder to the SoftGrid Server.

Application Package Upgrade
Throughout the lifecycle of an application, applications will need to be updated on occasion. It is important to understand the options associated with updating an application, and when to use the different options.

Updating a Package that will replace the Existing Package
Sometimes, a package needs to be updated and replace the existing package. In this case, follow these steps when sequencing and subsequently publishing in production:

- Copy the package to the Sequencer.
- Open the package for Package Upgrade
- Select Q: to decode the package to.
- Run the Installation Wizard and make the appropriate changes to the package. If the change needs to be made to a VFS’ed package, make sure to make the change in both the “real” folder and the folder on Q:
- After the Installation Wizard, run the Application Wizard. Launch all shortcuts in the same manner as during the original sequence.
- Save the package. Because this application will replace the existing application, there is no need to perform a Save As. Note that the SFT file will now have a version number appended to the file name.
- Once the package has been tested you will need to upload the new version into the production environment. Upload all of the files from the package (OSD, SFT, ICO, and SPRJ) into the content folder.
- Open the SoftGrid Management Console and Click the Packages Section. Right click the package you are currently working on and select “Add Version”. Point to the full path of the SFT file click next and point to the relative path (the relative path is the same as the full minus the server name and content directory i.e. Adobe_Acrobat_Reader_707_MNT_2)

Updating a Package that will run at the same time as an Existing Package
- Sometimes, a package needs to be updated, but the business community still wants access to the existing package. In this scenario, follow these steps:
  - Copy the package to the Sequencer.
  - Open the package for Package Upgrade
  - Select Q: to decode the package to.
  - Run the Installation Wizard and make the appropriate changes to the package. If the change needs to be made to a VFS’ed file, make sure to make the change in both the “real” folder and the folder on Q:
  - After the Installation Wizard, run the Application Wizard. Modify either the Name or the Version for all of the shortcuts, as these must be unique for each shortcut. Launch all shortcuts in the same manner as during the original sequence.
  - Select “Save As” to save the package. Check the “Save As New Package” checkbox to create a new SUITE name and a new package root. Remember the package root must be 8.3 compliant and unique.
Add the package to the test environment by copying the package to the content folder and importing the OSD’s into the Management Console.

Once the package has completed testing, the package can be moved to production. Add the package to the production environment by copying the package to the content folder and importing the OSD’s into the Management Console.

Compression of the SFT

In some scenarios you may decide to add compression to the package that you are sequencing. If the application is compressed we can have significant reduction in size of the SFT. This compression reduces the amount of data that will be distributed from the SoftGrid Server to the SoftGrid Client. The compression will impact the end client, as this will have to be decompressed the SFT and put the data into the clients cache. This is because the decompression algorithm is CPU intensive. The default setting is “No Compression” and should be left unless the target LAN for streaming is excessively slow.

Advanced OSD Scripting

In some instances it may be necessary to make modifications to the application to get it to function properly in the SoftGrid environment. One of the most common methods is making modifications to the OSD file to allow certain actions to be performed at a specified time during the execution of the application.

To help determine when a script should be run use the table below to help determine when a script should be executed during the launch or closing of an application.

<table>
<thead>
<tr>
<th>Scripting Event</th>
<th>Followed by</th>
</tr>
</thead>
</table>

Figure 4 - Save As Dialog
**PRE STREAM**  Client connects to the SoftGrid server.  
Launch data is streamed from the SoftGrid server to the SoftGrid Client

**POST STREAM**  The virtual environment is setup

**PRE LAUNCH**  Application is started

**POST LAUNCH**  Application is closed by the user

**POST SHUTDOWN**  
Note that the client does not support a **SHUTDOWN** event with Timing of **PRE**.

The **PROTECT** attribute specifies if the script runs inside or outside of the virtual environment.  
The **WAIT** attribute specifies if the client waits for the script to finish before proceeding to the next phase.

Scripts can be written in any language but their language must be installed locally on the client machine.  
For example if they are using PERL, the PERL runtime must be locally installed on the client machine.

There are two kinds of scripts `<SCRIPTBODY>` and `<HREF>`.

**<SCRIPTBODY> Examples**

**Example 1 – ABORTRESULT and SUCCESSRESULT**

If ABORTRESULT is specified, the client will check the script's exit code when it completes.  If SUCCESSRESULT is specified (and if ABORTRESULT is not or it does not match the script's exit code), the client will check the script's exit code to see if it matches the value in SUCCESSRESULT.

```
<DEPENDENCY> <SCRIPT TIMING="PRE" EVENT="LAUNCH" PROTECT="TRUE" WAIT="TRUE" 
TIMEOUT="10" SUCCESSRESULT="1" ABORTRESULT="0">
<SCRIPTBODY>@ if not %COMPUTERNAME% == "SpecialComputer" exit 1 @ exit 0 
</SCRIPTBODY>
</SCRIPT>
</DEPENDENCY>
```

A more detailed explanation of these commands can be found at:

http://support.microsoft.com/kb/930973/en-us

**Example 2 – Pre-Launching Command Prompt**

```
<DEPENDENCY>
<SCRIPT TIMING="PRE" EVENT="LAUNCH" WAIT="TRUE" PROTECT="TRUE">
<SCRIPTBODY>cmd.exe</SCRIPTBODY>
</SCRIPT>
</DEPENDENCY>
```

**Example 3 – Embedding Batch File Commands within OSD File**

```
<DEPENDENCY>
<SCRIPT EVENT="LAUNCH" TIMING="PRE" PROTECT="TRUE" WAIT="TRUE">
<SCRIPTBODY>
```
Example 4 – Pre-Launching EXE from within the Sequence

```
<DEPENDENCY>
<SCRIPT TIMING="PRE" EVENT="LAUNCH" WAIT="TRUE" PROTECT="TRUE">
<SCRIPTBODY>%SFT_MNT%\OfficeXP\Office10\proflwiz.exe</SCRIPTBODY>
</SCRIPT>
</DEPENDENCY>
```

Example 5 – Pre-Launching a Data File (e.g. AVI file) from within the Sequence

```
<DEPENDENCY>
<SCRIPT TIMING="PRE" EVENT="LAUNCH" WAIT="TRUE" PROTECT="TRUE">
<SCRIPTBODY>%SFT_MNT%\App\Data\Sequencing.avi</SCRIPTBODY>
</SCRIPT>
</DEPENDENCY>
```

NOTE: In this example, the sequencing.avi launches the locally installed Media Player.

NOTE: A data file (e.g. sequencing.avi) cannot be specified within the FILENAME entry of the CODEBASE tag as shown below.

```
<CODEBASE
FILENAME="App\Data\Sequencing.avi"
SYSGUARDFILE="App\osguard.cp"
HREF="rtsp://softgrid:554/app.sft"
GUID="A2A6D95E-8898-41C0-8020-797B23A1E917"
SIZE="33363442"/>
```

Example 6 – Pre-Launching a Control Panel Applet within the Sequence

```
<DEPENDENCY>
<SCRIPT TIMING="PRE" EVENT="LAUNCH" WAIT="TRUE" PROTECT="TRUE">
<SCRIPTBODY>%SFT_MNT%\CPL\SYSDM.CPL</SCRIPTBODY>
</SCRIPT>
</DEPENDENCY>
```

Example 6a – Pre-Launching a Control Panel Applet within the Sequence

```
<DEPENDENCY>
<SCRIPT TIMING="PRE" EVENT="LAUNCH" WAIT="TRUE" PROTECT="TRUE">
<SCRIPTBODY>
"C:\Program Files\Common Files\System\Mapi\1033\mlcfg32.cpl"
</SCRIPTBODY>
</SCRIPT>
</DEPENDENCY>
```
Example 1 – Accessing local application
<DEPENDENCY>
<SCRIPT TIMING="PRE" EVENT="LAUNCH" WAIT="TRUE" PROTECT="TRUE">
<HREF>c:\winnt\system32\cmd.exe</HREF>
</SCRIPT>
</DEPENDENCY>

Example 1a – Accessing Batch File via UNC
<DEPENDENCY>
<SCRIPT TIMING="PRE" EVENT="LAUNCH" WAIT="TRUE" PROTECT="TRUE">
<HREF>\SRV_NAME\NT_SHR\PRE_SCRIPT.CMD</HREF>
</SCRIPT>
</DEPENDENCY>

NOTE: HREF tag cannot be used with %SFT_MNT% or to launch EXE from within virtual environment.

<PARAMETERS> Examples
NOTE: The PARAMETERS tag will not support environment variables (e.g. %SFT_MNT%).

Example 1 – Generic Example
<CODEBASE
FILENAME="\ABCD\EXECUTE\Z_RUN.EXE"
PARAMETERS="FORM=MRF01 LANG=ENG ZENV=X_POINT_CHAR"
SYSGUARDFILE="ACBS\osguard.cp"
HREF="rtsp://hercules:554/ACBS_V2.sft"
GUID="BD9AF94E-4A8E-415D-B57F-54A454911FAA"
SIZE="648019522"/>

Example 2 – Launching Data File via a Relative Path
<CODEBASE
FILENAME="App\WordEditor\wordpad.exe"
PARAMETERS=" ..\Data\cli.doc"
SYSGUARDFILE="App\osguard.cp"
HREF="rtsp://softgrid:554/app.sft"
GUID="A2A6D95E-8898-41C0-8020-797B23A1E917"
SIZE="33363442"/>
NOTE: ‘..\Data\cli.doc‘ is located in the following location within the sequence:
%SFT_MNT%\App\Data\cli.doc

Example 3 – Launching a Data File via an Absolute Path
<CODEBASE
FILENAME="App\WordEditor\wordpad.exe"
PARAMETERS=" Q:\App\Data\cli.doc"
SYSGUARDFILE="App\osguard.cp"
HREF="rtsp://softgrid:554/app.sft"
GUID="A2A6D95E-8898-41C0-8020-797B23A1E917"
SIZE="33363442"/>
NOTE: This example assumes that the SoftGrid Client Virtual Drive is Q: (e.g. Q:\App\Data\Cli.doc).
Examples – Specifying a Working Directory

Example 1
<IMPLEMENTATION>
<WORKINGDIR>C:\temp</WORKINGDIR>
FILENAME="np_ecj\notepad.exe" PARAMETERS="cjm.txt"
GUID="D47C0A23-32CF-11D6-990A-00A0CC6413D5"/>
<OS VALUE="WinXP"/>
</IMPLEMENTATION>

Example 2
<IMPLEMENTATION>
<WORKINGDIR>C:\program files\internet explorer</WORKINGDIR>
FILENAME="np_ecj\notepad.exe" PARAMETERS="cjm.txt"
GUID="D47C0A23-32CF-11D6-990A-00A0CC6413D5"/>
<OS VALUE="WinXP"/>
</IMPLEMENTATION>

Example 3 – Example with Variable
<IMPLEMENTATION>
<WORKINGDIR>%SFT_MNT%\App\Data</WORKINGDIR>
FILENAME="np_ecj\notepad.exe" PARAMETERS="cjm.txt"
GUID="D47C0A23-32CF-11D6-990A-00A0CC6413D5"/>
<OS VALUE="WinXP"/>
</IMPLEMENTATION>

Registry Customizations

<REGISTRY>
<REGKEY HIVE="HKLM" KEY="Software\Test">
<REGVALUE REGTYPE="REG_SZ" NAME="string">Holas</REGVALUE>
<REGVALUE REGTYPE="REG_DWORD" NAME="dword">5051</REGVALUE>
<REGVALUE REGTYPE="REG_BINARY" NAME="hex">50,51,52</REGVALUE>
<REGVALUE REGTYPE="REG_SZ" NAME="Value of Default Key">Value of Default Key</REGVALUE>
</REGKEY>
</REGISTRY>
</VIRTUALENV>
</IMPLEMENTATION>

Launching Local Applications

NOTE: The PARAMETERS tag will not support environment variables (e.g. %SFT_MNT%).

Example 1 – Launching Application that is local (not part of the Sequence)
<CODEBASE
FILENAME="C:\Program Files\Internet Explorer\iexplore.exe"
SYSGUARDFILE="App\osguard.cp"
HREF="rtsp://softgrid:554/app.sft"
GUID="A2A6D95E-8898-41C0-8020-797B23A1E917"
SIZE="33363442"/>
<VM VALUE="Win32">
<SUBSYSTEM VALUE="Windows"/>
</VM>

<CODEBASE
FILENAME="C:\Program Files\Windows Media Player\wmplayer.exe"
PARAMETERS=" q:\app\data\sequencing.avi"
SYSGUARDFILE="App\osguard.cp"
HREF="rtsp://softgrid:554/app.sft"
GUID="A2A6D95E-8898-41C0-8020-797B23A1E917"
SIZE="33363442"/>
<VM VALUE="Win32">
<SUBSYSTEM VALUE="Windows"/>
</VM>

NOTE: C:\Program Files\Windows Media Player\wmplayer.exe is a local application.

Multiple Operating System Support

<SOFTPKG>
<IMPLEMENTATION> This section launches the application on Windows 2000
<DEPENDENCY>
<SCRIPT EVENT="LAUNCH" TIMING="PRE" PROTECT="TRUE" WAIT="TRUE">
<SCRIPTBODY>cmd.exe</SCRIPTBODY>
</SCRIPT>
</DEPENDENCY>
<CODEBASE
FILENAME="OfficeXP\Office10\WINWORD.EXE"
SYSGUARDFILE="OfficeXP\osguard.cp"
HREF="rtsp://softgrid:554/OfficeXP.sft"
GUID="5963F393-B7F0-47E5-8646-40FC6E80271A"
SIZE="484727932"/>
<VM VALUE="Win32">
<SUBSYSTEM VALUE="windows"/>
</VM>
<OS VALUE="Win2K"/>
</IMPLEMENTATION>
<IMPLEMENTATION> This section will launch the application on Windows XP
<CODEBASE
FILENAME="OfficeXP\Office10\EXCEL.EXE"
SYSGUARDFILE="OfficeXP\osguard.cp"
HREF="rtsp://softgrid:554/OfficeXP.sft"
GUID="5963F393-B7F0-47E5-8646-40FC6E80271A"
SIZE="484727932"/>
<VM VALUE="Win32">
<SUBSYSTEM>Windows</SUBSYSTEM>
</VM>
<OS VALUE="WinXP"/>
</IMPLEMENTATION>
Launching Application via Non-Default Provider Policy

<CODEBASE
FILENAME="Photoshop\Photoshop.exe"
SYSGUARDFILE="Photoshop\osguard.cp"
HREF="rtsp://sgserver:554/adobephotoshop70.sft?Customer=Sales"
GUID="FE72DDCD-6E80-4ABE-8E82-8208A134CB34"
SIZE="178299260"/>

Running an Application as a CONSOLE application

<OS VALUE="Win2K"/>
<OS VALUE="Win2KSvr"/>
<OS VALUE="Win2KTS"/>
<OS VALUE="Win2003Svr"/>
<OS VALUE="Win2003TS"/>
<OS VALUE="WinXP"/>
<VIRTUALENV>
<ENVLIST/>
</VIRTUALENV>
<VM VALUE="Win16"> WARNING! VM Values are case sensitive; WIN16 does not work.
<SUBSYSTEM VALUE="console"/>
</VM>
</IMPLEMENTATION>

OSD XML Syntax Check

To check the XML syntax of an OSD file, change the .OSD file extension to .XML and drop the .XML file into an Internet Explorer Window.

Example XML file syntax display: <xml version="1.0" standalone="no" ?>

- <SOFTWARE
GUID="26998703-328D-41DE-A256-5AFACD27ED08" NAME="WinZip"
VERSION="90">
- <IMPLEMENTATION>
<CODEBASE
HREF="rtsp://ntlabsg01:554/Winzip_Winzip_901_MNT/Winzip_Winzip_901_MNT.sft"
GUID="A9800C2A-E9ED-4711-B90C-808D6DD0AABC"
FILENAME="\Winzip.v1\WINZIP32.EXE" PARAMETERS=""
SYSGUARDFILE="\Winzip.v1\osguard.cp" SIZE="6225393" />
<OS VALUE="Win2K"/>
<OS VALUE="Win2KSvr"/>
<OS VALUE="Win2KTS"/>
<OS VALUE="Win2003Svr"/>
<OS VALUE="Win2003TS"/>
<OS VALUE="WinXP"/>
<VM VALUE="Win32">
<SUBSYSTEM VALUE="windows"/>
</VM>
- <VIRTUALENV>
<ENVLIST/>
</VIRTUALENV>
Advanced Sequencing Techniques

This section will briefly cover some sequencing challenges and how to overcome them. Finally, it is also recommended to be aware of the logs created when sequencing, a list of the log files related to the sequencer process and their purpose will be.

Sequencing Applications That Cannot Install to Q:\

At some point while sequencing applications you will most likely run across an application that will not let you install to Q:\. This by itself does not present a problem when sequencing the application. In fact only one minor modification will need to be made.

- When it comes time to hit the “Stop Monitoring” button you will browse to the root of Q:.
- Make a directory for your application using the 8.3 naming convention and select this directory as the asset directory
- Select Ok and continue sequencing as normal.

There is a reason that this technique is at the end of the guide. There are pros and cons when sequencing with this method.

Pros
- You can sequence applications that will not install to Q:\
- You can use existing packages for your sequencing. Hence many configurations and settings will already be included.

Cons
- You have no visibility to the installation. If something goes wrong you may have trouble determining where the sequencing failed.
• More files in the VFS means your sequencing process will slow down. For most applications you will not notice a difference however when sequencing applications over 1GB in size you will notice a definite slow down in the sequencing process.

• Some files may not translate well to being placed in the VFS. Sometimes an application uses batch files that look in a specific place to execute a command or an INI file does the same for a configuration. These files do not always translate well to being placed in the VFS and may need to be manually edited to reflect their correct location.

Sequencing Web Based Applications
Internet Explorer is NOT supported in a sequenced application. However you can sequence plug-ins or ActiveX controls for Internet Explorer.

This pulls the locally installed application into the virtual environment with the additions you have specified. In this case it was a web plug-in. This lets you have a clean and secure Internet Explorer that you can lock down on a users machine and then allow them to use the plug-ins that you define.

Sequencing for an OS other than the one required by the application.
In certain situations applications may not function on Windows XP. One possible work around for this is to sequence the application on Windows 2000 and include files only found on Windows 2000 in the package. It may be necessary for you to sequence the application multiple times to identify all of these files and get them included in the package. It is also worth noting that while there has been a high degree of success utilizing SoftGrid for this purpose it is not what the software was intended to do and therefore there is no guarantee that this will work.

With the introduction of Vista and User Account Control (UAC) you may find that you need to sequence an application on Vista if you plan on deploying it to Vista Machines as well. Unfortunately there are no hard and fast rules for this situation so you will have to make these changes as you come across certain
applications. Again it is important to remember that if you have UAC enables on your client machines then you must have it enabled on the sequencer as well. If your environment has windows Vista with UAC enabled or you are planning a deployment of Windows Vista than Microsoft Strongly recommends that you test application functionality to this client.

**Sequencing applications that require access to local devices and or resources**

In many ways you sequence these applications no different than you would any other. The applications inside the virtual environment can see the local resources on the OS and can access them. Devices are another matter. SoftGrid cannot virtualize drivers. If you can install the driver separately from the application then the application will fall through to the OS to look for the driver and see that it is installed.

**Sequencer Log Files**

- **Sft-seq-log.txt**
  
  Description: The main log file for logging on the sequencer.
  
  Path: `%ProgramFiles%\Softricity\SoftGrid Sequencer\Logs`

- **Sftbrt.txt**
  
  Description: Stores the actions taken during the reboot processing.
  
  Path: `%ProgramFiles%\Softricity\SoftGrid Sequencer\Logs`

- **SFTCallBack.txt**
  
  Description: Records all process starts and stops seen by SystemGuard.
  
  Path: `%ProgramFiles%\Softricity\SoftGrid Sequencer\Logs`

- **Filter.log**
  
  Description: A binary log that stores file activity during sequencing.
  
  Path: `%ProgramFiles%\Softricity\SoftGrid Sequencer\Logs`

- **Files.txt**
  
  Description: Logs all files in the VFS. It must be enabled by setting HKLM\Software\Softricity\SoftGrid Sequencer\CurrentVersion\Configuration\FileManifest to “1”. (REG_DWORD)
  
  Path: `%ProgramFiles%\Softricity\SoftGrid Sequencer\Logs`

**Finding Additional Information**

**Error Codes and the Microsoft Knowledge Base**

Microsoft has completed the process of migrating data off of the old Softricity knowledge base. The knowledgebase contains useful information regarding planning, implementation and troubleshooting SoftGrid. A link to the Microsoft knowledgebase follows:

[http://support.microsoft.com](http://support.microsoft.com)

*Error Code Formats*: When searching the knowledge base for error codes, be aware that the first 12 digits are unique to the version of the SoftGrid client software. The ending 8 digits of the error code remain constant between all client versions.

When you search for an error code, enter the last 8 digits such as 000DF004.
In addition, Justin Zarb from Premiere Field Engineering in the UK has written an excellent article relating to the SoftGrid error codes and what they mean. The article can be found at:


**SoftGrid Team Blog**

This is probably the single greatest repository of SoftGrid related information on the web. This should be your first stop for anyone interested in learning about SoftGrid and Sequencing. The blog is updated frequently so keep checking it for more information. Additionally look through the archives for valuable information as well.

- RSS Feed - http://blogs.technet.com/softgrid/rss.xml

**SoftGrid Product Documentation**

The following SoftGrid product documentation is available in electronic form in PDF format and can be downloaded from:

http://download.microsoft.com/download/C/7/D/C7DCA0EB-3F2F-4606-B867-1EA91DB643B2/SoftGrid_v4.x_Documentation.exe

The documents found within this download are:

- SoftGrid Client Installation Guide
- Quick Start Guide
- Sequencer Installation Guide
- Server Installation Guide
- Platform Administration Guide
- Sequencer Manual

**SoftGrid Related Technical Discussion Forums and Web Sites**

Here is a list of non-Microsoft sites that contain information relating to the SoftGrid product and sequencing. Some of these sites include useful SoftGrid related technical discussion forums. While these sites contain valuable information about SoftGrid it should be noted that these sites are not affiliated with Microsoft in any way and cannot verify any of the information contained within.

- http://www.softgridguru.com/
- http://MyITForum.com
- http://www.brianmadden.com
- http://www.appdeploy.com/
- http://blogs.technet.com/virtualworld