



Application Virtualization 4.5 for Terminal Services

White Paper Summary

This whitepaper discusses the benefits, configurations and considerations when planning a Terminal Services solution with Microsoft Application Virtualization (App-V).

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# Overview

Microsoft Application Virtualization (App-V) for Terminal Services (TS) allows organizations to realize the benefits of App-V for desktops on their terminal servers. This document will explain the setup and configurations for implementing App-V for Terminal Services.

Server sprawl is a costly issue for organizations that rely on Terminal Services. To avoid application conflicts, applications must undergo significant testing to determine which applications will conflict and, therefore, must be separated and run on different terminal server silos—a time-consuming and costly process.

Running multiple separate terminal servers for each application routinely results in servers being underutilized because each one is locked into a specific configuration, capable of serving only a limited set of non-conflicting applications, typically using just 25 percent of capacity. Often, 20 servers are required to support 1,000 users. Microsoft App-V for Terminal Services completely changes this situation.

The Terminal Services environment (many users sharing a single server or servers, but with individual desktops and applications), is different from a desktop environment (one user utilizing a single client OS resources and applications). However, the benefits of App-V translate into the Terminal Services environment. These benefits include:

* **Consolidate Servers and End Server Siloing, Increasing Server Farm ROI:** App-V's application virtualization allows most applications to run alongside any other—even applications that normally conflict, multiple versions of the same application, and many applications that previously could not run under Terminal Services. This eliminates the need for server silos and significantly improves server utilization. As a result, the number of servers needed is much lower, operational costs for managing the remaining servers are reduced, and the server farm ROI is increased.
* **End Application Conflicts and Regression Testing:** By eliminating the need to permanently install applications on servers, and shielding the operating system and applications from changes created when installed applications run, Microsoft App-V for Terminal Services prevents problems that hinder deployments. The need to perform lengthy regression testing is also significantly reduced.
* **Accelerate Application Deployment:** Applications that use App-V typically only need to be packaged once for desktop or Terminal Services platforms. However, the packages should be tested on all target platforms to ensure compatibility. This reduces the need for "double packaging" or creating two different processes and packages when providing the choice of running an application on a desktop or via a terminal server.
* **Reduce Deployment Risk:** Installing a new application on a terminal server was traditionally a risky process; first you had to ensure all users were logged off, then you had to change the mode of terminal server and, often, you then had to reboot. Software updates and uninstalls introduce even great complexity and risk. With Microsoft App-V, applications can be deployed and updated on demand to users without having to reboot or log users off.
* **Simplify Profile Management:** Microsoft App-V allows application settings and data to be stored in a single network location. This ensures a user’s application settings are available no matter what terminal server is used—without the need for roaming profiles. Additionally, this feature makes mandatory profiles a viable option for TS scenarios—operating system settings remain locked within the mandatory profile while per-application settings can still be modified by the user. This dramatically simplifies the complexities of managing profile data.

## Assumptions

The content in this guide assumes that the reader is familiar with Terminal Services technology and Microsoft App-V, and is planning or evaluating the use of App-V on Terminal Services.

# App-V and Terminal Services

Combining App-V and Terminal Services provides great benefits for organizations that either currently use Terminal Services or are looking at implementing Terminal Services. Using App-V provides a cost-effective solution as it eliminates many deployment and maintenance costs.

This section will explain the steps for installing and configuring App-V on Terminal Services to ensure a supportable working environment. Installation and configuration of Terminal Services where it is not specific to App-V will be referenced separately in additional documentation.

## App-V Terminal Server Setup

Installing the App-V Terminal Services Client is no different than installing other applications on a terminal server. Installing applications on a terminal server requires using install mode for the terminal server.

### Terminal Services Install Mode

As mentioned above, installing an application on a terminal server requires placing it into install mode. In both Windows Server® 2008 and Windows Server 2003 the following command will switch the terminal server into install mode.

From a Command Prompt on the terminal server with no users logged in, execute:

* Prior to installation: **change user /install**
* Upon completion of install: **change user /execute**
* Query the current mode of terminal server: **change user /query**

The corresponding GUI can be used to properly install applications on a terminal server.

**Windows Server 2008**

On Windows Server 2008 an application can be installed on a terminal server by going to **Control Panel | Programs** and choosing **Install Application on a Terminal Server.** Then follow the wizard to install the App-V Client.

**Windows Server 2003**

On Windows Server 2003 an application can be installed on a terminal server by going to **Control Panel | Add or Remove Programs | Add New Programs** and select **CD or Floppy.**

## App-V Terminal Services Client Considerations

Installing the App-V Terminal Services Client requires planning of the client configuration. This isn’t any different than the App-V Windows® Desktop Client, but some of the settings require additional consideration for deployment on a terminal server. The following settings should be carefully considered when planning an App-V Terminal Services install. Additional information is available in the App-V Application Publishing and Client Interaction Whitepaper located at: <http://go.microsoft.com/fwlink/?LinkId=127120> and the App-V Planning and Deployment Guide at: <http://go.microsoft.com/fwlink/?LinkId=122063>.

* **Global Data Location:** This location is the default store of the sftfs.fsd file or client cache, along with other App-V files. The App-V file system cache can be moved independently of the global data location. Because the cache file can be quite large, consider placing it in an alternate location from the default (c:\Documents and Settings\All Users\Documents on Windows XP and Windows Server 2003 and c:\users\public\public documents on Windows Vista and Windows Server 2008).
* **Preferred Drive Letter:** This setting determines the drive letter that will be used by the App-V Client to mount the virtual file system. If the drive letter is changed from the default (Q:), then it should be set consistently on all App-V Clients and should match the drive letter that is assigned to the second disk partition on a sequencing workstation (e.g., S:).
* **User-specific Data location:** This setting determines where the App-V Client stores user-specific changes to virtual application packages (e.g., usrvol\_sftfs\_v1.pkg). By default, the App-V TS Client will place the user-specific data in the AppData folder of the user’s profile. If mandatory TS profiles are used, then the AppData folder of TS user profiles should be redirected to a network location (e.g., a subdirectory within the user’s TS home directory).
* **Cache Size Settings:** The App-V Client (Windows desktop or Terminal Services) allows the cache (sftfs.fsd file) to be configured in one of two ways:
  + **Use maximum cache size:** Sets the cache to an absolute maximum size.
  + **Use free disk space threshold:** Sets the cache to grow as long as there is available disk space on the terminal server.

The settings above should be considered for all terminal server client installations. It is recommended to carefully plan and standardize on as many of these settings as possible to ensure the most cost-effective support for terminal servers.

# Terminal Services Profiles

A Terminal Services user may have both a standard user profile for his or her desktop on the Windows Server 2008 server and a Terminal Services profile. This allows the user to maintain different settings for logon from the Windows desktop and to the terminal server. There are two options when planning a storage location of App-V user data.

The first option is to redirect the App-V user data to a separate network location outside of the user’s profile. This is achieved by configuring the App-V Client to store user data to a network location. This can be done during the setup of the Client using the GUI installer or with the installation command-line parameter (SWIUSERDATA). Additional information on configuring installation command-line parameters is available at: <http://technet.microsoft.com/en-us/library/cc843737.aspx>.

This option eliminates the complexity and additional considerations for configuring the App-V data in user profiles. However, it does add an additional location that needs to be maintained and made available to all terminal servers in the farm to enable a consistent user experience.

The other option is to store the App-V user data with the user’s profile. There are specific configurations that are required to ensure proper App-V operation. The details of configuring profiles are presented in the following section.

There are three choices when planning a profile solution for the Terminal Services environment. Each has benefits and drawbacks that must be considered in order to develop the most appropriate solution for the environment.

## Profile Types

The information provided in this section provides an overview of planning profiles for terminal servers. Detailed steps and additional considerations are available at: <http://technet.microsoft.com/hu-hu/library/cc766489(en-us).aspx>.

### Local Profiles

Local profiles store the user-specific settings and data only on the terminal server where the user logs in. This situation would be acceptable if there is only one terminal server. However, as more users log on and create profiles on the terminal server the disk space consumed could become a burden without using folder redirection, which will be discussed later in this section.

### Roaming Profiles

Roaming profiles allow for the user’s profile to be stored on a network location. This solution works well in an environment where users need to make changes to their profile and retain them in subsequent logons. Also, it is beneficial when users log on to multiple computers (e.g., terminal server farm) where the expected user experience is to retain any changes made to their profile settings and data.

Roaming profiles are stored on a server, but are copied locally when the user logs on to a computer. Upon logoff the user’s profile changes are copied back to the roaming profile location. This can increase the user logon and logoff times. One option would be to configure profile quota settings using Group Policies. This can mitigate the risk of having the profile data consuming disk space. Another important consideration is that profiles aren’t granular and stored as a flat file. If multiple copies of a user’s profile are open, the settings in the copy that were saved and closed last will be the ones reflected in the network-based roaming profile.

### Mandatory Profiles

Mandatory profiles differ from roaming profiles in that users can edit them, but the changes that are made are not saved to the profile. One drawback to mandatory profiles is that a user can save data to a profile based data location, but it will not be saved as part of the profile when the user logs off. Changes are not copied back to the network location. Using folder redirection in combination with mandatory profiles is imperative to allow users to save files to their personal folders that are part of the profile.

Mandatory profiles give administrators more control over the user environment by ensuring that any user changes that were made will not be saved and those changes cannot cause support incidents for the help desk. Mandatory profiles also speed up logoff times as no data is being saved to the network.

## Folder Redirection

The reasons for folder redirection are different for mandatory and roaming profiles, but they should be considered when planning a Terminal Services solution with or without App-V.

As mentioned previously, mandatory profiles allow users to edit the profile settings and data, but those changes are not saved for subsequent use. This can be problematic and generate many support calls if the user saves a file to a data location that is part of the profile and then logs off. The file will not be saved and upon the next logon the data file which is not part of the mandatory profile will be lost. The use of Group Policies with folder redirection can be used to redirect data locations to separate network locations to which the user can save data.

With roaming profiles a user can make changes to settings and data stored in the profile, but the data and settings have to be copied back to the network location during logoff and copied back to the local profile upon logon. This can increase the size of profile storage on a local terminal server and the network location, and slow down the logon and logoff process for users. Group Policies with folder redirection can be used to redirect data locations that can increase the size of the profile and increase the logon and logoff times. For roaming users, these profiles should be stored on a fault tolerant file server.

With the addition of an App-V Terminal Services Client, the introduction of virtual applications and user-specific data are presented to support virtual applications. This user-specific data (usrvol\_sftfs\_v1.pkg) is stored by default in the user’s profile in the **AppData/Roaming** folder (Windows Server 2008) or **Application Data** folder (for Windows Server 2003). It contains user-specific changes to virtual applications. This can include changes the user makes to the UI (toolbars) or modifications to configuration of a virtual application (Outlook Profile). This data needs to be available to provide App-V with the data to preserve users’ application customizations and settings as they move to different servers on a Terminal Services farm. For more information about how user-specific data is stored and its usage, read the App-V Application Publishing and Client Interaction document located at: <http://go.microsoft.com/fwlink/?LinkId=127120>.

This data can be redirected from the profile by using Group Policies to redirect the application data out of the user profile to a user-accessible location for proper configuration of virtual applications. These settings can enable central terminal server user profiles location and reduce the size of data stored on the terminal server locally for long-term support benefits. Additional guidance on configuring profiles for both Terminal Services and Windows desktops can be found at: <http://technet.microsoft.com/en-us/library/cc766489.aspx> and in the MS Press book **Windows Server 2008 Terminal Services Resource Kit:** <http://www.microsoft.com/learning/en/us/Books/12716.aspx>.

# Virtual Application Deployment to Terminal Servers

When planning a terminal server deployments with App-V there are several options available to deliver the virtual application packages to the terminal server. The following table lists the supported publishing options and recommended Terminal Services features (Remote Desktop and RemoteApp) when used with different App-V deployment methods:

| Deployment Method | Infrastructure Required | Supports User Publishing | Supports Computer Publishing | Recommended w/ Remote Desktop | Recommended w/ RemoteApp/Web App |
| --- | --- | --- | --- | --- | --- |
| Full Infrastructure w/ RTSP(s) | App-V Management Server  App-V Data Store (SQL)  App-V Management Service  IIS Server | Yes | No | Yes | No |
| Full Infrastructure w/ HTTP(s) or File Streaming | App-V Management Server  App-V Data Store (SQL)  App-V Management Service  IIS Server | Yes | No | Yes | No |
| Stand Alone Client (MSI) | HTTP/File/RTSP Server if streaming | No | Yes | Yes | Yes |
| SCCM R2\* | SCCM  IIS Server | No\* | Yes | Yes | Yes |
| SFTMIME\* | None required | Yes\* | Yes | Yes | Yes |

\* Using Microsoft System Center Configuration Manager (SCCM) R2 with terminal servers only allows delivery to the console session for advertisements. This would eliminate the possibility of user-based targeting as the users will not log on to the console session and, therefore, will not run the advertisement. This is a SCCM limitation for both virtual and traditional applications. Also, using SFTMIME to deliver packages is only recommended if targeting the terminal server computer and not users.

The table above describes possible methods for deploying virtual application packages to terminal servers and Windows desktops. When thinking about terminal servers or Windows desktops and choosing the best deployment method, you must consider the type of use for the computer. Since terminal servers are normally used by many users, deployment methods that deliver only to computers have some key drawbacks that must be evaluated. For additional information about client settings, behavior and data locations, download and read the App-V Application Publishing and Client Interaction Guide at: <http://go.microsoft.com/fwlink/?LinkId=127120>.

Terminal servers often host applications for many users. In many cases, not all users should be able to run all applications on the terminal server. With user-based publishing the applications will only appear for the users to which they were published. However, when computer-based publishing methods are used, any application that has been published to a computer would be available to all users of the terminal server. This is often not the desired result and will need to be considered when planning a Terminal Services environment with App-V.

Also, the active upgrade feature is a very compelling feature of App-V. However, on a terminal server all users of an application package would have to close all applications in a package for the active upgrade feature to work. On a Windows desktop environment, only one user is logged in at a time and that user would simply have to close and reopen the application.

## Choosing a Delivery Method

The delivery method used depends on the version of terminal server, the features that are going to be implemented, and to what purpose terminal servers are deployed. In the previous table there are several methods of delivering virtual applications to a terminal server.

### Recommendations

Several key factors will be present when deciding which deployment method should be used. The following recommendations should be implemented when choosing a deployment method to achieve the most favorable results:

* Virtual applications should be pre-cached on terminal servers
* Terminal servers should be placed in maintenance mode for upgrades

In order to select the appropriate delivery method, administrators will need to plan for the recommendations listed above. The following table lists the upgrade process for each delivery method and the pre-cache capabilities for each delivery method.

| Deployment Method | Upgrade Process | Preload App-V Cache Capability |
| --- | --- | --- |
| Full Infrastructure w/ RTSP(s) | * Version updated on App-V Management Server * Terminal server placed in maintenance mode * First open of package will upgrade | No |
| Full Infrastructure w/ HTTP(s) or File Streaming | * Version updated on App-V Management Server * Terminal server placed in maintenance mode * Publishing refresh * First open of package will upgrade | No |
| Stand Alone Client (MSI) | * Terminal server placed in maintenance mode * New version of package MSI executed | Yes\* |
| SCCM R2 | * Terminal server placed in maintenance mode * SCCM R2 advertisement executes | No\* |
| SFTMIME | * Terminal server placed in maintenance mode * Updated package published with SFTMIME | Yes\* |

**\* The use of MSI, SCCM R2, and SFTMIME can be configured to preload the cache with different results. By default the MSI-based installation will load the package into the App-V cache, but can be configured for streaming. SCCM R2 has two delivery options: streaming and download and execute. Neither of them preload the package into the App-V cache, however download and execute will place it locally on the terminal server and will be loaded to the App-V cache on first use. SFTMIME can be configured to load the package and would be recommended for terminal servers that use Full Infrastructure or manual publishing for preloading the App-V cache.**

Using the information from the two previous tables, administrators can develop a solution based on the features that are required and the management tasks associated with each of them. The following information provides additional details on how different targeting and delivery methods behave and the benefits and drawbacks of each one.

### User-Based Targeting

Targeting users has been the standard feature with App-V Full Infrastructures. This deployment method works well with a terminal server configured to deliver a remote desktop to the user. Pre-caching of applications in user-based targeting would require the use of SFTMIME or SFTTRAY to ensure that applications are completely loaded into cache prior to users connecting to sessions and using the virtualized applications.

### Computer-Based Targeting

Targeting computers was introduced with the previous version of App-V. The ability to create MSIs for deployment provides a useful option for deploying applications to terminal servers because it can be configured to pre-load the App-V cache. MSIs, SCCM, and SFTMIME (with /GLOBAL switch) can all be used with computer based targeting. Computer based targeting is limited in the fact that virtual applications deployed to computers are available to any user that logs on to a session.

### Streaming Methods

The streaming method of deployment has the benefit of supporting an active upgrade or at least the differential streaming available to update only the changed data when upgrading. These methods are normally referred to as Full Infrastructure. All of the delivery methods support a streaming concept with the proper configuration. The use of streaming methods for delivery will require that virtual applications are pre-cached to achieve optimal results and will need to be done through scripting using SFTMIME or SFTTRAY. The Full Infrastructure provides user-based targeting that works well with a remote desktop delivery with Terminal Services.

### Stand Alone Methods

Stand-alone methods of deployment of either MSI or SCCM R2 can operate in two separate ways. For an MSI (MODE=STREAMING LOAD=FALSE) or SCCM R2 (Streaming) deployment, it can be configured to support streaming of the package. This has the drawback of not pre-caching the virtual application. If used as the default MSI installation (LOAD=TRUE) or in SCCM (download and execute) the application will be pre-cached. However, in SCCM (download and execute) the virtual application will be placed in the SCCM cache and will be brought to App-V cache on first launch. Both of these options with stand-alone only target computers. There is no user-based targeting available. Stand-alone delivery methods work well with both the remote desktop and RemoteApp features in Terminal Services.

### SFTMIME

SFTMIME can operate as a delivery method that can load the package or stream the package, target users, or target computers. SFTMIME requires writing scripts to perform the addition of packages for the selected target. The packages manifest.xml file contains the publishing information. SFTMIME as the delivery method can be configured to support the remote desktop and RemoteApp features of Terminal Services. More information is available on using SFTMIME to publish packages in the Extensibility Today Before the SDK whitepaper at: <http://go.microsoft.com/fwlink/?LinkId=127120>.

**Note: When using SFTMIME with RemoteApp it is recommended to only use computer based targeting of virtual applications.**

# Terminal Services for Windows Server 2008

With Terminal Services, organizations can provide access to Windows-based programs from almost any location to almost any computing device. Terminal Services in Windows Server 2008 includes Terminal Services Remote Desktop, Terminal Services RemoteApp® (TS RemoteApp), Terminal Services Web Access (TS Web Access), and Terminal Services Gateway (TS Gateway). Combining these features with App-V provides additional flexibility and options when planning a Terminal Services infrastructure.

## Terminal Services Remote Desktop

Terminal Services Remote Desktop enables organizations to provide access to an entire Windows desktop environment from virtually any location to users. TS Remote Desktop presents the user with a Windows Desktop running on a remote server. This can provide users access to corporate applications in more locations and in some cases be used as the user’s primary desktop environment.

## Terminal Services RemoteApp

Terminal Services RemoteApp enables organizations to provide access to standard Windows-based programs from virtually any location to users with computers running Windows Vista®, Windows Server 2008, or Windows XP with Service Pack 3. TS RemoteApp is also available to users with computers running Windows XP with Service Pack 2 (SP2), Windows Server 2003 with Service Pack 1, or Windows Server 2003 with SP2 that have the new Remote Desktop Connection (RDC) client installed.

### What are Terminal Services RemoteApp programs?

Terminal Services RemoteApp programs are programs that are accessed remotely through Terminal Services and appear as if they are running on the end user's local computer. Instead of being presented to the user in the desktop of the remote terminal server, the TS RemoteApp program is integrated with the client's desktop, running in its own resizable window with its own entry in the taskbar. Users can run TS RemoteApp programs side-by-side with their local programs. If a user is running more than one TS RemoteApp program on the same terminal server, the TS RemoteApp programs will share the same Terminal Services session.

## Terminal Services Web Access

Terminal Services Web Access is a role service in the Terminal Services role that lets you make TS RemoteApp programs, and a connection to the terminal server desktop, available to users from a Web browser. Additionally, TS Web Access enables users to connect from a Web browser to the remote desktop of any server or client computer where they have the appropriate access.

With TS Web Access, users can visit a Web site (either from the Internet or from an intranet) to access a list of available TS RemoteApp programs. When they start a TS RemoteApp program, a Terminal Services session is started on the Windows Server 2008-based terminal server that hosts the TS RemoteApp program.

## Terminal Services Gateway

Terminal Services Gateway is a role service in the Terminal Services server role of Windows Server 2008 that allows authorized remote users to connect to resources on an internal corporate or private network, from any Internet-connected device. The network resources can be terminal servers, terminal servers running TS RemoteApp programs, or computers with TS Remote Desktop enabled.

## Configuring Terminal Services for Windows Server 2008

This document focuses on any specific settings when configuring Terminal Services for Windows Server 2008. Links are provided for step-by-step detail in configuring Terminal Services for Windows Server 2008 below:

* TS RemoteApp Step-by-Step Guide (includes TS Web Access configuration): <http://technet.microsoft.com/en-us/library/cc730673.aspx>
* TS Gateway Step-by-Step Guide: <http://technet.microsoft.com/en-us/library/cc771530.aspx>

Additional guidance on configuring Terminal Services for Windows Server 2008 is available at: <http://technet.microsoft.com/en-us/library/cc754746.aspx>

## Terminal Services for Windows Server 2008 and App-V Considerations

Configuring a Windows Server 2008 terminal server with the App-V Terminal Services Client brings many benefits to the environment that has been listed previously in this document. There are some considerations that must be made when choosing between the Remote Desktop and RemoteApp features of Terminal Services for Windows Server 2008.

### Terminal Services Remote Desktop vs. RemoteApp with App-V

Choosing between TS Remote Desktop and TS RemoteApp will depend on the desired result. If Terminal Services is being used to present a user with an entire desktop environment with all of the user’s applications, then TS Remote Desktop is an easy choice. If Terminal Services is being used to make an application or a few applications available seamlessly to a user’s local desktop and applications, then TS RemoteApp becomes more compelling. TS RemoteApp presents the applications to the user in a way that they appear to be locally installed, whereas TS Remote Desktop will require a user to use a separate desktop to access applications hosted on the terminal servers.

#### Terminal Services Remote Desktop Considerations

When using TS Remote Desktop, App-V behaves very similar to the Windows desktop client. A terminal server or farm of terminal servers could host many users, but with different virtual applications published to different users. This can be achieved with an App-V full infrastructure and user-based targeting. This option requires much less administrative overhead than the same option using TS RemoteApp. However, if an organization has implemented computer targeting of virtual applications with TS Remote Desktop, any user that is connected to a terminal server would have access to all of the virtual applications that have been deployed to it.

NOTE: If using SCCM to deploy virtual applications to terminal servers, computer targeting must be used.

#### Terminal Services RemoteApp Considerations

By using TS RemoteApp with App-V it is possible to deploy virtual applications to users. However, configuring TS RemoteApp will require additional administrative steps and is not recommended. Using TS RemoteApp with computer-based targeting, administrators can control which applications are available to individual users by only deploying the RDP or MSI files to the appropriate users. This will achieve a similar functionality as the TS Remote Desktop with user-based target, but will have the added benefit of integrating the application in the user’s local desktop.

### Configuring Terminal Services RemoteApp

When configuring the TS RemoteApp program list, App-V virtualized applications are not available in the list of applications for the administrator of the terminal server to configure, unless the applications have been deployed using MSI or SCCM R2 deployment methods. This is by design as the terminal server is not aware of the App-V virtual applications which have been published to users on the App-V for Terminal Services Client. Terminal Services is only aware of virtual applications that have been published to the terminal server computer.

When a program that has been virtualized using App-V is configured as a TS RemoteApp in Windows Server 2008, the icon for the program is displayed as the standard Terminal Services icon instead of the icon normally associated with the virtualized application. You are also unable to change the icon to use an ICO file from the application package ICO files. This behavior is by design as Terminal Services with RemoteApp in Windows Server 2008 only allows icons that are embedded in DLLs and EXEs. With App-V, the executable points to SFTTRAY.EXE and not the application EXE. The following KB article describes the behavior at: <http://support.microsoft.com/default.aspx?scid=kb;en-us;970831&sd=rss&spid=13952>

The following steps can be completed to acquire the correct icon from a virtual application for use with TS RemoteApp.

1. Publish the virtual application to a user on the terminal server.
2. At a command prompt run the following command:

**SFTTRAY.EXE /exe cmd.exe /launch “Application Name”**

**NOTE: The “/launch “<Name of Program + Version>” can be found by looking at the details of a shortcut to a virtual App-V application (e.g., /launch “Microsoft Office Word 2003”). Alternatively the App-V Client Management console, SFTMIME, or the registry can be used to find the correct “<Name of Program + Version>”**

1. Once the command prompt is open, copy the EXE or DLL for the application that has the embedded icons in it to the location on the terminal server (e.g., c:\AppVEXEs).

Next, if using a full infrastructure (user-based targeting with a Management Server publishing) with TS RemoteApp, the following steps must be completed:

1. Launch the **Add RemoteApp Programs** wizard from the **Actions** in the **TS RemoteApp Manager** located in **Administrative Tools | Terminal Services.**
2. Click **Browse** in the **Choose programs to add to the RemoteApp Programs List** screen.
3. Browse to **Program Files\Microsoft Application Virtualization Client** and select **sfttray.exe** and choose **Open.**
4. Select **Properties** and change the following settings:
   1. **RemoteApp program name:** <Name of Application>
   2. **Alias:** <Alias Name of Application>
   3. **Command-line arguments:** Change setting to **Always use the following command-line arguments:** and specify the following arguments:
      1. **/launch “<Name of Program + Version>”**

**NOTE: The “/launch “<Name of Program + Version>” can be found by looking at the details of a shortcut to a virtual App-V application (e.g., /launch “Microsoft Office Word 2003”). Alternatively the App-V Client Management console, SFTMIME, or the registry can be used to find the correct “<Name of Program + Version>”**

* 1. **Change Icon:** Browse to the location where the EXE or DLL with embedded icon files have been copied (e.g., c:\AppVEXEs) as described above, and select the appropriate file to acquire the correct icon.

**NOTE: If deploying applications with stand-alone methods MSI or SCCM R2, these steps are not applicable as the virtual applications and icons will appear correctly.**

When a RemoteApp program is deployed to clients by using the Windows Installer Package option, the MSI that is generated may need to be modified to correctly associate file types with the deployed application. To edit the contents of the MSI, you can use the Orca database editor available at: <http://support.microsoft.com/kb/255905>. Once the RemoteApp MSI has been generated, open it with your MSI editor, select the Extension table and remove the filename extension entries that should not be associated with the application. Repeat this process with the contents of the MSI’s Registry table. You can now save and deploy the MSI.

At all times, the icon filename path should not have more than one ‘.’ in it or the icon will not appear correctly when used with RemoteApp.

### Publishing Considerations

When an application is published to all users on a Terminal Services system, care must be taken to publish it to locations that will be accessible to all users. For example, if specifying the CSIDLs in the App-V Management Server, use the COMMON CSIDLs such as CSIDL\_COMMON\_PROGRAM instead of CSIDL\_PROGRAM. Similarly, if using SFTMIME to publish, use the /GLOBAL flag to publish to all users.

# App-V for Terminal Services and Citrix Presentation Server / XenApp

App-V 4.5 can be used on both native terminal servers and those terminal servers with XenApp or Presentation Server installed. App-V is ideal for use when you require the same infrastructure for both your desktop PCs and your terminal servers.

# More Information

To learn more about App-V, go to:  
<http://go.microsoft.com/fwlink/?LinkId=127120>

Windows Server 2008 Terminal Services Solution Accelerator:  
<http://technet.microsoft.com/en-us/library/cc268349.aspx>

To find out about the Windows Server 2008 Terminal Services Resource Kit, go to: <http://www.microsoft.com/learning/en/us/Books/12716.aspx>